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THE MOLLUSCA OF THE BOWDEN BEDS

OF

JAMAICA.

--oOo--

A Dissertation

Submitted to the Board of University Studies
of the Johns Hopkins University in conformity with
the requirements for the degree of
Doctor of Philosophy

by

WENDELL PHILLIPS WOODRING

Baltimore
May, 1916

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Summary.

The present work is a preliminary attempt at the synthesis of the data on the geology of the Antillean region. It is believed to represent a horizon of knowledge which is only tentatively satisfactory and is available to definitely correlate it with the Tertiary section of the coastal plain of the United States. It is hoped that this work will serve as a basis for the collection of the data on the geology of the Antillean region.

The present work is divided into three headings has the disadvantage of postponing the expression of the conclusions of certain chapters, but the advantage lies in the segregation of elements and relations that are subject to change. The present work is a preliminary attempt at the synthesis of the data on the geology of the Antillean region. It is believed to represent a horizon of knowledge which is only tentatively satisfactory and is available to definitely correlate it with the Tertiary section of the coastal plain of the United States. It is hoped that this work will serve as a basis for the collection of the data on the geology of the Antillean region.

it is considered necessary, not only to remedy deficiencies in the original statement, but also to bring it up to date. It is hoped that this work will serve as a basis for the collection of the data on the geology of the Antillean region.

each occurrence to the proper authority except in the case of the Antillean region. It is hoped that this work will serve as a basis for the collection of the data on the geology of the Antillean region.

with the Antillean region. It is hoped that this work will serve as a basis for the collection of the data on the geology of the Antillean region.

Julia A. Gardner from various sources.

APPENDIX.

The following list of books, which are now in the
possession of the Library of the University of Toronto,
at Toronto, and which were purchased by the University,
and which are now in the possession of the University,
and which are now in the possession of the University,
and which are now in the possession of the University,
and which are now in the possession of the University.

(1). Ward, J. H., Practical Geology, 1883, 1884.

(2). Ward, J. H., Practical Geology, 1883, 1884.

(3). Ward, J. H., Practical Geology, 1883, 1884.

(4). Ward, J. H., Practical Geology, 1883, 1884.

Apparently most, if not all, of his collections were obtained
from Mr. Borden, and it is, therefore, not surprising
the impression that the material came from Borden (1), and his

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of Jamaica Mr. Robert E. Hill also made a collection and the
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97

3. Geological Analysis.

The molluscan faunas in question were referred with general unanimity of opinions to the Miocene by Moore (1), (Santo Domingo); vol. 19, pp. 510-517, 1885 (Jamaica).

from Dowden and presumably his usage was in conformity with

The molluscan faunas in question were referred with general unanimity of opinions to the Miocene by Moore (1),

(Santo Domingo); vol. 19, pp. 510-517, 1885 (Jamaica).

- (11). *Journal of the American Medical Association*, Vol. 10, No. 1, 1917, pp. 1-10.
- (12). *Journal of the American Medical Association*, Vol. 10, No. 1, 1917, pp. 1-10.
- (13). *Journal of the American Medical Association*, Vol. 10, No. 1, 1917, pp. 1-10.
- (14). *Journal of the American Medical Association*, Vol. 10, No. 1, 1917, pp. 1-10.
- (15). *Journal of the American Medical Association*, Vol. 10, No. 1, 1917, pp. 1-10.
- (16). *Journal of the American Medical Association*, Vol. 10, No. 1, 1917, pp. 1-10.
- (17). *Journal of the American Medical Association*, Vol. 10, No. 1, 1917, pp. 1-10.
- (18). *Journal of the American Medical Association*, Vol. 10, No. 1, 1917, pp. 1-10.
- (19). *Journal of the American Medical Association*, Vol. 10, No. 1, 1917, pp. 1-10.
- (20). *Journal of the American Medical Association*, Vol. 10, No. 1, 1917, pp. 1-10.

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1915.

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preliminary survey of the Borden fauna and described many of its
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Almost 70 percent of the Bowden pelecypods are pec-
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species that are known to occur in Santo Domingo; the largest
number in common with any horizon in the Floridian succession
... ..
and 7 with the Tampa and also the Oak Grove. The actual num-
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over, as the distributional list indicates, much is contingent
... ..
... ..
on the extent to which a fauna has been studied.

The Floridian Tertiary succession, which must be con-
... ..
... ..

[illegible]

31. *Arca (Scapharca) perpleura* n.sp. p.132
 32. *Arca (Scapharca) inaequilateralis* Guppy p.134
 33. *Arca (Scapharca) donacia* Dall p.139
 34. *Arca (Scapharca) prephaina* n.sp. p.141
 35. *Arca (Scapharca) wordeni* n.sp. p.143
 36. *Arca (Scapharca) agnatha* n.sp. p.143
 37. *Arca (Scapharca) thomasi* n.sp. p.147
 38. *Arca (Argina) telepia* Dall var. *microtera* n.sp. p.149
 39. *Arca (Cunearca) ophthanta* n.sp. p.152
 40. *Arca (Batharca) hendersoni* Dall p.155
 41. *Arca (Anadara) daseia* n.sp. p.158
 42. *Glycymeris jamaicensis* Dall p.160
 43. *Glycymeris acuticostatus* (Sowerby) n.sp. p.164
 44. *Glycymeris pennacea* (Lamarck) p.167
 45. *Pinna refovea* n.sp. p.171
 46. *Atrina* sp. indet. p.174
 47. *Nelina* sp. indet. p.175
 48. *Theridion* *preocera* n.sp. p.176
 49. *Istrea megalon* Hanley p.178
 50. *Ostrea haitiensis* Sowerby p.183
 51. *Ostrea folium* Linnaeus p.190
 52. *Pecten (Pecten) barretti* n.sp. p.194
 53. *Pecten (Euvola) bowdenensis* Dall p.197
 54. *Pecten (Euvola)* sp. indet. p.200
 55. *Pecten (Chlamys) vaginulus* Dall p.202
 56. *Pecten (Chlamys) ameleus* n.sp. p.205
 57. *Pecten (Chlamys) neomorphus* n.sp. p.207
 58. *Pecten (Chlamys) bellipictus* n.sp. p.208
 59. *Pecten (Neopecten) inaequalis* Sowerby var. *acutipictus* n. var. p.209

Tampa Bay
 Santa Lucia

Cuba

Artigua

Angilla

Curaçao

Cumana

Estimur of

Quier

Galun form

Costa Rica

Mexico (dia.)

Chilola m

Cab. Creek

Shoal River m

Californian

Costa Rican

Calvert form

St. Mary's

Florida

Porto Rico

Delphi form

Californian

Minid (Muc.)

Costa Rica

Mexico

Maccamus form

Californian

Californian

Peru

Philocene

Recent

Cligocene

Miocene

Miocene

Recent

X X

X X

X X

? ?

X

X

X X

X

?

X X

X

X

X

10. *Pecten (Aequipecten) simplex* n. sp. p. 214
11. *Pecten (Aequipecten) oxygonus* Sowerby p. 224
12. *Pecten (Aequipecten) elachistus* n. sp. p. 223
13. *Pecten (Aequipecten) concinatus* n. sp. p. 225
14. *Pecten (Pseudamysium) guppyi* Dall p. 227
15. *Pecten (Amysium) papyraceus* (Babb.) ? p. 229
16. *Pecten (Tropamysium) spendulus* n. sp. p. 232
17. *Spondylus bostrychites* Guppy p. 234
18. *Spondylus cookii* n. sp. p. 236
19. *Spondylus (echinatus var.?) inoikeus* n. sp. p. 240
20. *Picatula densata* Conrad p. 242
21. *Lima (Lima) stenocostata* n. sp. p. 246
22. *Lima (Mantellum) dalli* n. sp. p. 248
23. *Limaea solida* Dall p. 250
24. *Placunanomia lithobleta* Dall p. 252
25. *Homia microgrammata* Dall var. *indecisa* Dall p. 255
26. *Homia simplex* d'Orbigny p. 258
27. *Modiolus (Brachydontes) guppyi* Dall p. 262
28. *Reissena coelesta* (Kirk) var. *jamaicensis* n. var. p. 263
29. *Tellina gardnerae* n. sp. p. 267
30. *Verticordia (Trigonulina) bowdenensis* Dall p. 269
31. *Verticordia (Haliris) jamaicensis* Dall p. 271
32. *Paromys jamaicensis* Dall p. 273
33. *Cuspidaria (Cardium) craspedonia* Dall p. 276
34. *Cuspidaria (Bowdenia) distira* Dall p. 279
35. *Crassatellites (Scambula) jamaicensis* Dall p. 282
36. *Crassatellites (Scambula) attaspai* n. sp. p. 285
37. *Crassatellites (Crassinella) guppyi* Dall p. 287
38. *Crassatellites (Crassinella) bowdenensis* Dall p. 290
39. *Crassatellites (Crassinella) xenus* n. sp. p. 292

X

Tampa beds	
Santo Domingo	X
Cuba	
Antigua	X
Anguilla	
Curacao	X
Comana	
13th m.s. of Surin	
Gatun form.	
Costa Rica	X
Mexico (Clig?)	X
Chipula marl	X
Out. Gro. marl	
Spool River	
California (Mio.)	
Costa Rica (Mio.)	X
Colvert form.	X
St. Marks form.	X
Florida	X
Yorktown form.	X
Duplin form.	
California (Mio.)	
Trinidad (Mio.)	
Costa Rica	X
Mexico	X
Waccamaw	X
Chocoma, Ohio	X
Lower California	
Pore	
Neotoma	X
Nicene	

Oligocene

Miocene

Pliocene

Pleistocene

90. *Venericardia scabricostata* (Guppy) F 228
91. *Venericardia* (*Pteromeris*) *acaris* Dall, 228
92. *Chama involuta* Guppy P 300
93. *Chama macerophylla* Emelin P 305
94. *Echinochama antiquata* Dall P 307
95. *Codakia spinulosa* Dall P 312
96. *Codakia leuconea* n.sp. P 315
97. *Codakia* (*Tagonia*) *per tenera* Dall P 316
98. *Codakia* (*Tagonia*) *guppyi* n. n. n. P 318
99. *Codakia* (*Tagonia*) *ventryesi* Dall P 321
100. *Myrtaea limoniana* Dall P 324
101. *Myrtaea hispanola* n.sp. P 327
102. *Myrtaea* (*Eulopia*) *vermiculata* Dall P 329
103. *Myrtaea* (*Eulopia*) *furcata* Dall P 330
104. *Myrtaea* (*Eulopia*) *aranta* n. sp. P 332
105. *Phacoides domingensis* Dall ? P 333
106. *Phacoides* (*Here*) *podagrinus* Dall P 335
107. *Phacoides* (*Here*) *podagrinus* var. *alvarezi* n. n. n. P 339
108. *Phacoides* (*Here*) *browni* n. sp. P 340
109. *Phacoides* (*Here*) *tithonis* Dall P 342
110. *Phacoides* (*Pleurolecin*) *quadriscostatus* Dall P 344
111. *Phacoides* (*Carilucina*) *recurrens* Dall P 349
112. *Phacoides* (*Pseudomitha*) *glumindus* n.sp. P 351
113. *Phacoides* (*Callucina*) *pauperatus* (Guppy) P 351
114. *Phacoides* (*Callucina*) *pauperatus* var. *oligocostatus* n. var. P 354
115. *Phacoides* (*Callucina*) *curvostatus* n. sp. P 355
116. *Phacoides* (*Parrilucina*) *yaguensis* (Gubb) P 356
117. *Phacoides* (*Parrilucina*) *proteldus* n. sp. P 358
118. *Phacoides* (*Parrilucina*) *limneides* n. sp. P 360

Tampa beds
Santo Domingo
Cuba
Antigua
Anguilla
Curacao
Cuma
Isthmus of
Panama
Caton terr.
Costa Rica
Mexico (lig?)
Chipola marl
Oak Grove marl
Shoal River

California (Mioc.)
Costa Rica (Mioc.)
Culvert form
St. Marys form
Florida
Yorktown form
Duplin terr.

California (Mioc.)
Trinidad (Mioc.)
Costa Rica
Mexico
Waccamaw
Culicobutene

California
Peru

Pleistocene
Recent

Oligocene

Miocene

Pliocene

Recent

119. *Phacoides (Belluclina) actinos* Dall ^{P. 361}
 120. *Phacoides (Belluclina) archonterus* n. sp. ^{P. 363}
 121. *Diuricella previaricata* Guppy ^{P. 365}
 122. *Diuricella quadrisulcata* (Guppy) ^{P. 368}
 123. *Diplodonta walli* n. sp. ^{P. 372}
 124. *Diplodonta homoleptriata* n. sp. ^{P. 374}
 125. *Diplodonta (Felmanella) minor* Dall ^{P. 376}
 126. *Diplodonta (Phlyctiderma) punctorella* Dall ^{P. 378}
 127. *Erycina quadrata* (Gabb) ^{P. 380}
 128. *Erycina pura* n. sp. ^{P. 383}
 129. *Anisodonta (Basterotia) bowdeniana* Dall ^{P. 384}
 130. *Montacuta (?) menotreta* n. sp. ^{P. 387}
 131. *Cardium (Cardium) dissidipictum* n. sp. ^{P. 389}
 132. *Cardium (Trachycardium) inconspicuum* ^{P. 392}
 133. *Cardium (Trachycardium) lingualearis* Guppy ^{P. 394}
 134. *Cardium (Trachycardium) bowdenense* Dall ^{P. 396}
 135. *Cardium (Trachycardium) vaughani* n. sp. ^{P. 398}
 136. *Cardium (Fragum) medium* Linnaeus ^{P. 400}
 137. *Cardium (Fragum) elatocostatum* n. sp. ^{P. 412}
 138. *Cardium (Trigonocardia) haitense* Sowerby ^{P. 414}
 139. *Cardium (Trigonocardia) haitense* var. ^{P. 419}
 xymacense n. var. ^{P. 422}
 140. *Cardium (Trigonocardia) thumastom* n. sp. ^{P. 425}
 141. *Cardium (Laevicardium) serratum* Linnaeus ^{P. 428}
 142. *Protocardia jamaicensis* Dall ^{P. 430}
 143. *Protocardia* sp. indet. ^{P. 432}
 145. *Transennella amondea* n. sp. ^{P. 437}
 146. *Transennella elethusa* n. sp. ^{P. 439}
 144. *Xenofacia bowdeniana* (Dall) ^{P. 443}
 147. *Tivela jamaicensis* Dall ^{P. 446}

Turkey beds
 Santo Domingo
 Cuba
 Antigua
 Anguilla
 Curaçao
 Cornua
 Estuaries of
 barrier
 Galapagos form.
 Costa Rica
 Mexico (C. 19.?)
 Chipola m. m.
 Oak Creek m.
 Shoal River m.

Oligocene

California m.
 Costa Rica (Mio.?)
 Culvert form.
 St. Marys form.
 Florida
 Yorktown form.
 Duplin form.

Miocene

California (Plioc.)
 Trinidad (Plioc.)
 Costa Rica
 Mexico
 Haccam m.
 Calousan m.
 Lower
 California
 form.

Pliocene

Lower
 California
 form.
 Pleistocene
 Recent.

Recent

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

148. *Euforium* (Gouldia) insulare Dall + Simpson ^{p442}
 149. *Pitaria* (Hyphantosoma) caribaea (Guppy) ^{p445}
 150. *Pitaria* (Lamelliconcha) planivitta (Guppy) ^{p446}
 151. *Antigona* (Ventricola) blandiana (Guppy) ^{p453}
 152. *Cyclinella* plasiatensis n.sp. ^{p456}
 153. *Chione* sawkinsi n.sp. ^{p459}
 154. *Chione* retzyida n.sp. ^{p462}
 155. *Chione* woodwardi (Guppy) ^{p464}
 156. *Chione* (Liraphora) hendersoni Dall ^{p468}
 157. *Parastarte* antillensis n.sp. ^{p472}
 158. *Cooperella* (Tomidella) thaumasta n.sp. ^{p475}
 159. *Tellina* (Merisca?) acrocosmia Dall ^{p477}
 160. *Tellina* (Merisca) sclera Dall ^{p479}
 161. *Tellina* (Merisca) sclera var. lerasca n.var. ^{p480}
 162. *Tellina* (Merisca) aequistriata Say var. ^{p481}
 bowdenensis n.var.
 163. *Tellina* (Phyllodina) holistrecta Dall ^{p483}
 164. *Tellina* (Phyllodina?) lindsayi n.sp. ^{p485}
 165. *Tellina* (Eurytellina) sp. indet. ^{p486}
 166. *Tellina* (Moerella) simpsoni Dall ^{p487}
 167. *Tellina* (Moerella) hendersoni Dall ^{p489}
 168. *Tellina* (Angulus) pharida Dall ^{p491}
 169. *Tellina* (Angulus) gonida n.sp. ^{p493}
 170. *Tellina* (Angulus) apomsa n.sp. ^{p494}
 171. *Tellina* (Angulus) browni n.sp. ^{p496}
 172. *Tellina* (Angulus) pressa Dall ^{p497}
 173. *Tellina* (Scissula) scitula Dall ^{p499}
 174. *Strigilla* pisiformis (Linnaeus) ^{p501}
 175. *Macoma* (Psammacoma) tracta Dall ^{p504}
 176. *Macoma* (Psammacoma) olivella Dall ^{p506}

Tampa beds
 Porto Ceminie
 Cuba
 Antigua
 Anacostia
 Caracas
 Panama
 Bahamas of
 Oarion
 Galapagos
 Costa Rica
 Mexico (Chig)
 Chipeta marl
 Lak. Chuv. sand
 marl
 Shal. River

Oligocene

California (Mico)
 Costa Rica (Mico)
 Salvat. form
 St. Marys form
 Florida
 Yorktown form
 Duplin form

Miocene

California (Pia)
 Trinidad (Mico)
 Costa Rica
 Mexico
 Waccamaw form
 Calcasieu form

Pliocene

Lower
 California
 Peru

Post-Miocene

Pleistocene

Recent

X

X

X

X

X

X

X

X

X

X

X

X

- 117 *Macoma (Cymatocia) vendryesi* Dall p. 508
 118 *Semele calliconcinnata* n. sp. p. 510
 119 *Abra triangulata* Dall p. 512
 120 *Abra deatara* n. sp. p. 514
 121 *Donax lennoxii* n. sp. p. 515
 122 *Donax cymobria* n. sp. p. 517
 123 *Psammosten cumingianus* (Dunker) p. 518
 124 *Spisula* sp. indet. p. 522
 125 *Ervilia gabbi* n. sp. p. 523
 126 *Corbula (Aloidis) heterogena* Dall p. 525
 127 *Corbula (Cuneocorbula) sericea* Dall p. 530
 128 *Corbula (Bothrocorbula) viminea* Guppy p. 533
 129 *Gastrochaena ovata* Sowerby var. *retundata* Dall p. 534
 130 *Martesia* (?) sp. indet. p. 538
 131 *Xylophaga* (?) sp. indet. p. 539
 132 *Teredina boudeniana* Dall p. 540
 133 *Teredo* sp. indet. p. 542

Lampa beds
 Santa Domingo
 Cuba
 Antigua
 Arquilla
 Curacao
 Cumana
 Isthmus of
 Darien

Oligocene

Buton form.
 Costa Rica
 Mexico (Olig.)
 Chipola mol.
 Oak Grove sand
 Shoal River
 mol.

California (Mioc.)
 Costa Rica (Mioc.)
 Culvert form.
 St. Marys form.
 Florida
 Yorktown terr.
 Duplin form.

Miocene

California (Plioc.)
 Trinidad (Plioc.)
 Costa Rica
 Mexico
 Mucumun form.
 Culbertson form.
 Lower
 California
 Peru

Pliocene

Pleistocene
 Recent

Post-Miocene

... ..

elements will be mentioned.

Recent Areas are included in the list and several others, A.

four such are found in the Shipola fauna and three in the Tampa.

A modern element is, however, furnished by the introduction of hispaniolia to the Miocene and Pliocene liens and the recent leptocostata.

accepted, this species furnishes one of the interesting examples

accepted, this species furnishes one of the interesting examples

accepted, this species furnishes one of the interesting examples

2

Superfamily FUCULIDAE

Family Fuculidae

Genus FUCULA Lamarck

Subgenus Fucula s. s.

FUCULA MORRISIANA n. sp.

Description.— Shell small, subtriangular, moderately inequilateral, moderately inflated; anterior margin gently convex, rounding rapidly into the symmetrically arcuate base; posterior margin shorter, with a steeper slope and slightly more convex curve, insinuated below by the impingement of the boundary of the impressed area behind the umbo; umbones moderately prominent and opisthogyrate, placed behind the median suture; area behind the umbo definitely impressed, relatively large, cordate; external sculpture of coarse and strong concentric rugae and less conspicuous and finer radials which on adult shells fail to override the rugae; the sculpture of the posterior impressed area similar to that of the remainder of the shell, but weaker; chondrophore narrow, oblique; hinge heavy for the size of the shell, anterior series consisting of about ten teeth, slightly arcuate; posterior series shorter, straight, including about six teeth; inner margin of the valve finely crenulated.

Dimensions.— Length, 1.8 mm.; alt. 4 mm.; semi-diam. .9 mm.

Remarks.- This small and delicately sculptured species is represented by a number of valves. The characteristic features are the weakly, but obviously, impressed pseudo-lunule, the relatively strong sculpture and the moderately inequilateral outline.

N. tenuisculpta Gabb (1), a Santo Domingo Pliocene form, is more

(1). Trans. Am. Philos. Soc., new ser., vol. 15, p. 265, 1877.

elongated and has weaker and finer concentric sculpture and stronger radial striations. Cuvier has described two species, N. vieta (2) and N. baccata (3) from the Pliocene of Nauru, Trinidad; vieta is

(2). Proc. Sci. Assoc. Trinidad for 1867, p. 174; Geol. Mag., Decade 2, vol. 1, p. 443 (check list); pl. 18, fig. 8, 1874. Dall, (Trans. Wagner Free Inst. Sci., Philadelphia, vol. 3, pt. 4, p. 577, 1898) has placed this species together with tenuisculpta Gabb in synonymy with crenulata Hinds, but the two fossil species, at least, are distinct from each other.

smaller, higher, more oblique, more inflated and is without the posterior impressed area, while baccata is larger, more oblique,

(3). Idem, 1867, p. 174; idem, 1874, p. 443, pl. 18, fig. 7.

more inflated and has lower umbones, no posterior area, finer sculpture and more persistent radial striae.

Occurrence.- *Boerhaavia*: Bowden beds, Bowden, Jamaica.

Section *Plasiasarepta* n. sect.

Etymology.- *πλησίζω*, -to approach; *Sarepta*, a genus of pelecypods.

Shell of medium size, well inflated, transversely subelliptical in outline; inequilateral; umbones low, ovisthogyrate; areas before and behind the beak not differentiated; external sculpture consisting of numerous, regular concentric rugae; teeth forming the hinge relatively small, in two series, a longer anterior and a shorter, heavier posterior, separated by the chondrophore; ligament entirely internal, seated on a relatively large, deep-set, oblique chondrophore which is placed immediately before the umbo; internal margin of valve smooth; pallial line not known.

Type.- *N. hilli* n. sp.

In some respects this section is rather far removed from the typical *Muculas*, especially with regard to outline and sculpture. Apparently it approaches the genus *Sarepta* A. Adams, the type of which, *S. speciosa* is a recent Japanese form; the members of that genus are, however, rounder-ovate, and therefore equilateral or subequilateral, and have a narrow, elongated chondrophore, but at the same time there is at least a feeble development of an external ligament. In the case of *N. hilli* n. sp. there is no recognizable trace of an external ligament, the ligament being confined to the interior of the shell where it is situated on a prominent, obliquely directed chondrophore. Externally the shell somewhat resembles

certain regularly subovate or subelliptical forms of the genus Vallotia, as the recent West Indian M. Smithii Dall or M. pytharea Dall, but that genus is characterized by the entirely external position of the ligament.

TUBULA (PLATYCENTRA) HILLI n. sp.

Description.- Shell of medium size, thin, polished, decidedly inflated, inequilateral; outline transversely subelliptical, rounded posteriorly, produced and rounded anteriorly, ventral margin gently arcuate; umbones low, obisolate; external surface sculptured with well-defined, numerous, regular concentric rugae, which become crowded and less prominent on the dorsal half of the shell, the umbo being almost smooth; chondrophore relatively large, elongated, subtriangular, its axis oblique and curved, deeply set, placed immediately in front of the umbo; hinge-teeth short, in two series, decidedly discrepant in length; the anterior series longer, moderately curved, including fifteen or sixteen teeth progressively reduced in size toward the chondrophore and continuing almost to the tip of the umbo, the last few teeth being placed along the upper anterior margin of the chondrophore; posterior series short, straight or slightly concave, numbering five or six teeth of virtually the same size, the series ceasing abruptly at the chondrophore; inner margin of the valve smooth; internal surface of the shell polished; muscle scars and pallial line obscure.

Dimensions.- Length, 8.9 mm.; alt., 6.9 mm.; semidiam., 1.9 mm.

Remarks.- The subelliptical outline, inconspicuous umbones, well defined and regular concentric rugae of this species, which is represented by a number of valves, produce a facies which is

quite unmistakable. It is, in fact, unique among the Tertiary and Recent *Nuculas* of the Antillean region and is obviously so different from the majority of *Nuculas* that it might well be referred to a distinct category of more than sectional value. No forms german are known from the American Tertiaryes. Of the recent Antillean species *N. cymella* Dall (1) has regular concentric sculpture and smooth internal margins, but in other features the shell is more typically nucleiform, being less inequilateral and smaller than *hilli*, rounded-trigonal in outline and having the hinge more symmetrical.

This species is named in honor of Mr. Robert T. Hill, whose reconnaissance of Jamaica was an important step in the elucidation of the stratigraphic succession of that island.

Occurrence.-- Lower Miocene: Bowden beds, Bowden, Jamaica.

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- (1). Bull. Mus. Compt. Zool., Harvard, vol. 12, pp. 246-247, 1886; Proc. U. S. Nat. Mus., vol. 12, p. 258, pl. 13, fig. 1, 1889.
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Family Irididae

Subfamily Iridinae

Genus IEDA Schumacher

Section Jupiteria Bellardi

IEDA (JUPITERIA) PRINIIA Dall

Ieda acuta Cabb, 1873, Trans. Am. Philos. Soc., new ser., vol. 15,
p. 235, (ex parte). Not I. acuta Conrad, 1872.

Ieda peltella Dall, 1898, Trans. Wagner Free Inst. Sci., Philadelphia
vol. 5 pt. 4, p. 573 (name only), pl. 52, fig. 5.

Description.-- "Shell elongate, convex, beaks central; anterior
end rounded, base broadly convex; posterior end acute, hinge slight-
ly concave from the beaks to the posterior end. Surface marked
by regular rounded concentric ribs. Length .55 inch." (Cabb, 1873)

Type locality.-- Santo Domingo.

Shell of medium size, plump, decidedly high, slightly inequilateral;
anterior and posterior ends almost equally produced, the anterior
margin rounded and the posterior forming a rostrum, typically
short, blunt and very slightly recurved; ventral margin decidedly
arcuate; umbones low, subcentral in position; lunule narrow
but distinct, bearing relatively coarse transverse elevations not
continuous with the concentric ridges; be between large, bounded
by a well-marked carina; a faint sulcus usually present adjacent
to the rostral carina, anteriorly a second sulcus may be present;

external sculpture of regular, closely-set concentric rugae, equally developed throughout and extending across the rostral carina and escutcheon, but ceasing at the edge of the narrow lunule; teeth strong, with about twenty before and fifteen behind the small chondrophore.

Dimensions.-- Length 8.8 mm.; alt. 5.8 mm.; semidiam. 2.4 mm.

Remarks.-- The typical forms of this species- the most prolific of the *Ledas*- are characterized by their unusual, almost rotund, shape, which, together with the features of the lunule and escutcheon, permits such forms to be readily recognized. It is not surprising to find marked variability in a group which is so well represented. The most marked variation is toward a more elongate form and the end products are notably different from the average form. A different appearance is presented by certain forms which are high, but have the posterior carin sharper than usual, the escutcheon broader and the posterior and anterior sulci more definitely developed. The presence of an area in front of the beaks which differs in sculpture from the remainder of the shell is employed as the criterion in assigning these two antipodal types to this species. The sculpture is, however, fairly constant, although on a few forms the rugae are coarser than on typical individuals. The posterior sulcus is seldom conspicuous, in fact, very few individuals display it to such a degree as the one figured by Dall, and an anterior sulcus is but rarely developed.

Among Gabb's acuta are some forms which are larger than pelitella, more elongated and attenuated posteriorly and have a more concave posterior dorsal margin and more convex base; they probably should be separated from the other forms which resemble the Bowden pelitella.

Occurrence.-- Oligocene, Santo Domingo. (Gabb, 1877)

Lower Miocene: Bowden beds, Bowden, Jamaica. (Dall, 1898)

Leda (JUPITERIA) PERLEIDA Dall var. *PERLEIDA* n. var.

Leda perleida Snoddy, 1967, Proc. Sci. Assoc. Trinidad for 1967,
p. 173, (ex parte)

?*Leda perleida* Snoddy, 1974, Zool. Mar., Dec. 2, vol. 1, p.
448 (check list), pl. 18, fig. 3 (ex parte)

Description.— Shell small, polished, transversely elongate, virtually equilateral, notably convex; ventral margin broadly arcuate, anterior margin abruptly rounded, posteriorly rostrate— the rostrum being of medium length, blunt and slightly recurved; umbones tumid, strongly incurved and apisthogyrate, placed approximately at the median horizontal; costation poorly defined, bounded by a low rounded carina; area in front of beaks slightly impressed, but not forming a lunule; external surface sculptured with fine ridges which are more sharply sculptured and crowded on the distal half of the shell and are continuous across the impressed areas both before and behind the beaks; chondrophore relatively narrow and elongate; about sixteen teeth in the anterior series and thirteen in the posterior; muscle scars relatively large; pallial sinus obscure.

Dimensions.— Length, 5.8 mm.; alt., 3.4 mm.; semidiam., 1.3

mm.

- 1 -

Remarks.— The members of this well-represented variety are sharply differentiated from the co-existent Ledas. The elongate, equilateral form, polished surface and ventral crowding of the fine rugae are characteristic features. When compared with the more abundant and highly variable peltella and indirena the characters of the variety under discussion are constant. There is, however, a slight variation in shape, a few of the valves being higher and therefore less elongate than the typical form; this difference in outline is frequently encountered among immature forms. The extreme elongated variants of peltella somewhat resemble subvitreomorpha, but the two may ~~be~~ readily be distinguished since subvitreomorpha is less inequilateral, more convex, more bluntly rostrate and has more tumid and more decidedly opisthogyrate umbones and distally crowded rugae; moreover, it does not have the lunule or sharp posterior carina of cerata.

In the National Museum collection of Bowden material this form bears the name Leda vitrea d'Orbigny, although that species does not appear in the 1937 check-list. (1) Apparently there is some confusion concerning L. vitrea d'Orbigny (2) and at the

(1). Trans. Wagner Free Inst. Sci., Philadelphia, vol. 7, pt. 6, p. 1586. Several Ledas which do not appear in any of the Bowden collections at the writer's disposal are included in this list.

(2). In de la Harra, Hist., Phys., polit. et natur. de l'Isle de Cuba, Mollusques, vol. 2, pp. 262-263, pl. 2, figs. 27-29, 1857 (French ed.)

present time it is necessary to rely on d'Orbigny's figures, despite the fact that occasionally these figures have been found to be more artistic than accurate. When compared with the recent form which Dall(1) has described as a variety of vitrea d'Orbigny's figures indicate that his vitrea is less elongate, more sharply rostrated, more broadly rounded anteriorly and has a more prominent escutcheon and posterior carina, a slight posterior elevation and a fairly well-defined transversely sculptured umbone. On the whole these differences appear to be of an order sufficient to raise Dall's varietal name to specific rank.

The Bowden forms are very close to the recent cerata, but cerata of the same size are constantly different in having a less concave posterior dorsal margin, slightly more convex anterior margin, less convex base, less upturned rostrum and lower umbones. Apparently the recent form is quite variable, for a valve which is larger than any of the Bowden forms has a more concave posterior dorsal margin than subvitreamorpha, the base and rostrum are similar, but the umbo is proportionately lower. Until the recent species is better understood it seems advisable to consider the Bowden form as a variety.

Among Sippy's four cottages of perlepidia, from the Pliocene

(1). Bull. Mus. Compt. Zool., Harvard, vol. 9, p. 126, 1881;
idem, vol. 12, pp. 250-251, pl. 3, figs. 12, 13, 1883.

of Matura, Trinidad, are three small valves which can scarcely be distinguished from young, high Bowden specimens; the other, apparently adult, shell appears to be abnormal. Further exploration of the Trinidad locality may demonstrate the identity of the two forms, in which case Supp's name would be prior. No adequate conception of perlepis can be obtained from Supp's figure.

Dall (1) has placed in synonymy with vitrea, L. milleri Gabb (2) from the Miocene of Sapote, Costa Rica, but that species is more like the large, elongated forms which Gabb included under his Santo Domingoian L. acuta. (3) No definite statements can be made concerning Paula's Latin "Leda sp. (vielleicht eine neue Art, aff. Leda vitrea var. cerata Dall u. Leda sublaevis Bell.)" (4) since the figure is poor and the discussion inadequate. It is,

(1). Trans. Wagner Free Inst. Sci., Philadelphia, vol. 3, pt. 4, p. 370, 1908.

(2). Jour. Acad. Nat. Sci. Philadelphia, 2d ser., vol. 3, p. 346, pl. 44, figs. 22, 22a, 1931. (As Lucularia milleri)

(3). See under discussion of L. peltella.

(4). Jahrb. K.-k. geol. Reichsanstalt, vol. 58, p. 719, pl. 27, fig. 2, 1908.

however, larger and more inequilateral than subvitreamorpha and in all probability is distinct.

Occurrence.- Lower Tertiary: Bowden beds, Bowden, Jamaica.
? Pliocene (?) - Matura, Trinidad (Guppy 1867, 1874)

Section *Leda* s. s.

LEDA (*LEDA*) *INDIGENA* Dall.

Leda bisulcata Guppy, 1867, Geol. Mag., Decade 1, vol. 4, pp.
500-501, fig. 2.

Leda bisulcata Guppy, 1874, Geol. Mag. Decade 2, vol. 1, p. 445
(check list)

Leda bisulcata Guppy, 1882, Proc. Sci. Assoc. Trinidad, p. 175,
pl. 7, fig. 7.

Not *L. bisulcata* Neek and Vanden, 1861.

Leda indigena Dall, 1898, Trans. Wagner Free Inst. Sci., Phila-
delphia, vol. 7, pt. 4, p. 579 (name only).

Description.- "Shell ovately trigonal, with numerous concentric ribs narrower than their interstices; with a somewhat sinuous elevated ridge running from the umbo to the pointed rostrum behind; rounded anteriorly with a round groove running from the umbo to the ventral margin near the anterior angle. Umbones close; posterior dorsal area flat, sloping, striate continuously with the ribs of the disc; no very distinct anterior area. Teeth very prominent." (Guppy, 1867)

Type locality.- Jamaica.

Shell small, moderately inequilateral; posterior dorsal margin slightly excavated; rounded anteriorly, sharply rostrate

posteriorly, the rostrum being slightly recurved; ventral margin gently arcuate; umbones low, tumid, approximate, slightly coisothysate; lunule not differentiated, represented by a slightly depressed narrow zone; escutcheon sharply differentiated, broad, extending to the tip of the rostrum, bounded by a strong, sharp carina, which becomes slightly broader and flat distally, the exterior edge being sharp throughout while the edge facing the escutcheon is lower and less sharp; immediately anterior to the rostral carina is a shallow sulcus which is best defined in the umbonal region and scarcely affects the ventral margin; anteriorly a shallow, but sharply limited, sulcus runs from the umbo to the ventral margin, the outline of which it rarely affects; external surface sculptured with closely-set, regular, continuous concentric rugae, equally strong throughout and persisting across the rostral carina and escutcheon; teeth strong, about fifteen behind and sixteen before the deeply-set, small triangular chondrophore.

Dimensions.- Length, 3.5 mm.; alt. 5.3 mm.; semidiam. 1.5 mm.

Remarks.- Although the forms referable to this species are quite variable, they may usually be recognized by the pointed, slightly recurved rostrum, the sharp posterior carina and the broad, long escutcheon which is conspicuously sculptured by the persistent concentric rugae. Variations occur principally with regard to shape and the size and spacing of the concentric rugae. The typical indigena is rather elongated, but some forms tend to

approach peltella by being higher; such forms are distinguished from even the unusually strongly serrated and sulcated variants of the peltella group by the more decided emphasizing of the carina and accompanying sulcus, the more conspicuous development of an anterior sulcus, the presence of a more attenuated rostrum and the absence of a lunule. On the other hand, the elongated variants of peltella also approach indisena, - in this case the less sharply rostrated and sulcated forms of indisena - but such members of the peltella group may invariably be recognized by their weaker carina, blunter rostrum and differentiated lunule.

The young of indisena are proportionately higher than adults. On either side of the anterior sulcation a few faint radiating lines, subparallel to the sulcation, are occasionally present in the interspaces between the ridges. This species is a conspicuous element among the Iodas of the fauna, being surpassed numerically only by peltella.

I. indisena is very closely related to I. acuta (Conrad) (1) which ranges from the Upper Oligocene Chivola and Oak Grove beds of Florida to the Recent and also has a wide geographical range. The Bowden species is, however, in general terms smaller, less

(1). Am. Mar. Conch., p. 22, pl. 6, fig. 1, 1832. For synonymy see Dall, Trans. Wagner Free Inst. Sci., Philadelphia, vol. 3, pt. 4, pp. 592-593, 1898.

elongate, and has a more recurved rostrum and a more constantly fine concentric sculpture than acuta, as that species is accented; in addition the rostral carina is sharper and the sulci more pronounced than in the case of most acuta. None of the forms at hand have a sculpture as coarse as that which is commonly seen in any collection of acuta. The Bowden species varies principally with regard to shape; while the most notable variation of acuta concerns the sculpture. The tendency of indisens toward a less elongate, higher shape is very noticeable and therein lies, perhaps, the principal distinction between the two.

I. dodona Dall (1), of the Oligocene marl of Florida, belongs to the same general group. It may be distinguished by its very coarse concentric russe and also by its almost smooth esartecken. A species from the Oak Grove sand of Florida, I. trochilis Dall (2) is also closely related, but is recognized by the wide spaces between the often discontinuous and irregular russe and by the absence of russe on the rostral carina. The Miocene (Wilcox) I. robusta Aldrich (3) has coarse concentric sculpture which is evenly

(1). Trans. Wagner Free Inst. Sci., Philadelphia, vol. 3, pt. 4, pp. 529-530, pl. 32, fig. 3, 1898.

(2). Idem, p. 530, pl. 32, figs. 4, 12, 1898.

(3). Bull. Amer. Pal., vol. 1, no. 2, p. 17, pl. 5, figs. 1, 1a, 1895.

spaced only on the umbo and is almost obsolete in the region anterior to the anterior sulcation; in addition the chondrofore is placed well under the umbo so that it is almost concealed when the interior of the shell is viewed in normal position.

The "Leda cf. acuta" which Dall (1) described in his account of the "Pliocene" fauna of Johnstone's differ from both acuta and indigena in having the posterior portion of the ventral margin less convex and a straighter and blunter rostrum.

It may be added that Supp.'s figure of bisulcata is poor and probably represents a young, high individual.

(1). Jahrb. K.-k. geol. Reichsanstalt, vol. 61, p. 478, pl. 32, fig. 6, 1911.

Occurrence.--Lower Miocene: Bowden beds, Bowden, Jamaica (Cuppy, 1867, 1874; Dall, 1908).

Section Hebelela n. sect.

Etymology.-- Hebes, - blunt; Lelela.

Shell small, decidedly inflated, subequilateral, bluntly rostrated; rostrum carina subrounded; area behind the umbo flattened, but not impressed; external surface sculptured with concentric lines usually obscure and irregularly developed; hinge-teeth in two subequal series, separated by a relatively wide triangular chondrophore; ligament apparently entirely internal.

Type.-- L. bowleniana n. sp.

This section is proposed for the reception of two species and a variety - all new - which form a homogeneous group, sharply differentiated from the associated Leles. The group is characterized by its strongly inflated, bluntly rostrated form. L. duerdeni n. sp., the shortest of the three forms constituting this section, externally bears some resemblance to certain rostrated forms of the genus Tindaria, such as T. smirna Dall, a deep-water species from the Gulf of Panama, but aside from other considerations, Tindaria has an external ligament. L. pontonia Dall, dredged near the Galapagos Islands, appears to belong to the group under consideration. Through forms which are more sharply rostrated, less convex and more obviously sculptured Hebelela grades into Jupiteria.

- 1 -

LEA (HEBELEDA) BENDIRIANA n. sp.

Description.- Shell small, decidedly convex, transversely elongate, outline sub-triangular posteriorly rostrate, subequilateral, dorsal margins with steep slopes, the anterior being convex and the posterior concave; produced and abruptly rounded anteriorly; posterior margin forming a short blunt rostrum; broadly and symmetrically arcuate ventrally; umbones approximately central in position, high, very tumid, strongly incurved and opisthogyrate; area behind the umbo flattened; posterior corium low, broad and very feeble distally; external sculpture of irregularly spaced, poorly developed, fine impressed lines, obsolete on the umbones and in the area within the posterior corium, and coinciding with the irregularly spaced lines of growth in the distal half of the shell; chondrophore triangular, relatively broad; teeth in two series, with about nineteen in the slightly convex anterior series and about thirteen in the concave posterior series, the median teeth being small and obscure; muscle scars faint, relatively large; pallial line obscure.

Dimensions.- Length, 6.2 mm.; alt., 4.5 mm.; semidiam., 1.9 mm.

Remarks.- This species, the type of the section, is described from several valves which display constant characters.

The Galapagos form mentioned above, L. pontensis Dall (1) is larger and has a more excavated postero-dorsal margin and more

(1). Proc. U. S. Nat. Mus., vol. 12, p. 337, pl. 17, figs. 5, 5b, 1889.

convex base.

Occurrence.-- Lower Miocene: Bowden beds, Bowden, Jamaica.

1101 (V. 1101) BOWDENIANA var. SUBTUMIDA n. var.

Description.- Shell resembling the typical bowdeniana, but more elongate, slightly less convex; umbones lower and less tumid; ventral margin less curved; sculpture coarser and more irregular; chondrochore broader; hinge with about sixteen teeth in each series, the anterior series more convex and the posterior less concave than in the typical bowdeniana.

Dimensions.- Length, 3.5 mm.; alt., 4 mm.; semidiam., 1.7 mm.

Remarks.- A number of valves are included under this variety. When compared with bowdeniana they show the above differences, which, though slight, involve many characters and are constant. Since the variety is more elongate and has lower umbones, it follows that the slope of the lateral margins is less steep and the postero-dorsal margin less excavated.

A poorly preserved shell which is higher than the typical bowdeniana and has a shorter rostrum and obscure concentric sculpture which is obsolete on the posterior half of the shell, probably indicates a tendency to variation in a direction antithetical to subtumida.

Occurrence.- Lower Pleistocene: Bowden beds, Bowden, England.

LEDA (CERATODA) DUERDENI n. sp.

Description.- Shell small, polished, rounded-triangular with a short posterior rostrum, decidedly convex, subequilateral; posterior dorsal margin slightly concave; bluntly rounded anteriorly; ventral margin asymmetrically arcuate, being slightly more convex posteriorly; umbones high, tumid, strongly opisthogyrate; area behind the umbo distinctly flattened; rostral carina low, broad, but strong throughout; external surface sculptured with fine, evenly spaced, concentric lines except on top of the umbones and in the area bounded by the rostral carina- the sculpture at times obsolete on the posterior half or entire surface of the shell; chondrophore large, triangular, situated below and just anterior to the tip of the umbo; teeth strong, the anterior series numbering about thirteen and the posterior sixteen.

Dimensions.- Length 4.3 mm.; alt., 3.4 mm.; semidiam., .9 mm.

Remarks.- *L. duerdeni* has a facies totally different from *bowdeniana*; it is smaller, richer, and has a shorter, but more acute, rostrum, stronger ventral carina, more regular and more delicate external sculpture, larger chondrophore and heavier hinge. In outline it stands in decided contrast with the average *Leda* and without the testimony of the ligament would probably be placed

among the rostrated Tindarias, for which Verrill and Bush (1) proposed the subgenus Tindariopsis.

(1). Am. Jour. Sci., 4th ser., vol. 7, p. 59, 1897.

The name is given in recognition of the services of Dr. James E. Duerden, now of Rhodes University College, Grahamstown, South Africa, who while Curator of the Museum at Kingston, Jamaica, collected the Bowden material which constitutes the Duerden Collection of the Johns Hopkins University.

Occurrence.-- Locality: Bowden belf, Bowden Jamaica.

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LIMA (?) DIARA Guppy.

Ieda clara Guppy, 1874, Geol. Mag., Decade 2, vol. 1, p. 442,
(check list) pl. 17, figs. 1, 1a.

Ieda clara Guppy, 1875, Geol. Mag., Decade 2, vol. 2, p. 42.

Ieda clara Guppy, 1882, Proc. Sci. Assoc. Trinidad, p. 172, pl. 1,
fig. 4.

Description.— "Subelliptical, lenticulate, nearly equilateral, somewhat but not extremely rostrated. Disk smooth, shining; valves with a few fine close regular concentric riblets perceptible near the anterior angle, where an indistinct sulcus runs upwards towards the umbo. No distinct escacheon. Imbric narrow, indistinctly defined. Umbones prominent. Ventral margin slightly angulated at about a third of its length from the posterior point, where an obscure carina runs to the margin from the umbo. Length 12 mill., height 6, thickness about 4 mm." (Guppy 1875)

Type locality.— Jamaica.

Shell large, heavy, moderately convex, subequilateral; anterior dorsal margin convex, posterior dorsal margin excavated; abruptly rounded anteriorly; posterior margin bluntly rostrate above and obliquely truncated below, the slope of the truncation abruptly joining the direct, median portion of the ventral margin; umbones low, approximately central in position, strongly

opisthosgrate; lunule not differentiated, represented by a very narrow, slightly flattened area; area behind the umbo wider, flattened; rostral carina situated near the dorsal margin, low, relatively broad, subrounded; distal third of the shell bearing a very shallow sulcus immediately anterior to the rostral ray, the sulcus very slightly emarginating the truncated posterior margin; external surface sculptured with fine, impressed lines, feebly developed on the umbones and accentuated by irregularly spaced incrementals in the distal half of the shell; chondrophore large; teeth strong, becoming finer toward the point of divergence, the anterior series numbering about nineteen and the posterior series fifteen; muscle scars and pallial sinus obscure.

Dimensions.— Length, 17.5 mm.; alt., 7.5 mm.; semidiam.,

Remarks.— This species is conspicuous as being easily the largest of the Bowden Lediidae. Young shells display only a feeble posterior truncation below the blunt rostrum, but on mature individuals this feature is especially prominent. Since the pallial sinus is obscure the proper position of this form is doubtful; the shape, character of the external sculpture and absence of a well-defined lunule and sharp rostral carina suggest that it may find its proper place in the section Portlandica of the genus Yoldia— a section which has been considered of generic value, intermediate between Leda and Yoldia.

Occurrence.- Distribution: Bowden beds, Bowden, Jamaica.
(Copey 1974, 1975; Hall, 1977 (1)).

(1). This date refers to the check-list on pp. 17-18 of
vol. 7, pt. 4 of the Turner Institute papers. References
will be given to this list only when the species is not
designated as a member of the Bowden fauna in the text.

Genus VOIDIA Müller.

VOIDIA OVALIS Pabb.

Voidia ovalis Pabb, 1972, Trans. Am. Philos. Soc., new ser.,
vol. 15, pp. 255-256.

Description.- "Shell small, compressed, sub-elliptical;
beaks slightly in advance of the middle; hinge line sloping out-
ly, base and ends rounded; surface smooth or bearing a few faint
impressed concentric lines on the anterior part near the base.
Length .25 inch, width .15 inch." (Pabb, 1972)

Type locality.- Santo Domingo.

Shell of medium size, thin, polished, transversely subellip-
tical, moderately convex, decidedly compressed posteriorly; ant-
erior dorsal margin shorter and more oblique than the posterior,
the distal ends of both abruptly joining the lateral margins;
anterior lateral margin rounded; upper portion of the posterior
lateral margin almost at right angles to the dorsal margin, low-
er portion rounding evenly into the ventral and symmetrically across
ventral margin; umbones very low, situated anterior to the median
horizontal; behind the umbones lies a very narrow, slightly impres-
sed area, sculpture with fine lines and containing in its ventral

half a raised line parallel to and scarcely separated from the outer edge of the area; anterior to the umbo is a similar, but shorter area; external sculpture of very fine, inconspicuous, impressed lines, obsolete in the umbonal and posterior regions and at times over the entire shell; chondrophore relatively large; teeth fine, the two series diverging at a very obtuse angle; about eighteen teeth in the anterior and twenty in the posterior series; anterior teeth larger, in both series the size reduced gradually toward the point of divergence; muscle scars obscure; pallial line sharply, but not deeply, sinuated.

Dimensions.- Length, 10.7 mm.; alt., 6 mm.; semidiem., 1.9 mm.

Remarks.- The feebly impressed areas before and behind the umbones are very narrow and inconspicuous. In the case of young forms it may be better to describe the shell as having before and behind the umbones a very narrow and shallow sulcus which impinges on the dorsal margins at approximately the distal extremities of the hinge, since on such forms the ridge just inside what is described as the impressed areas in the adult is prominent enough to cause such an appearance. The anterior and posterior margins are similarly rounded, but the curve of the posterior margin is more complete since the posterior dorsal margin is less oblique than the anterior.

The single Santo Domingo specimen is slightly more elongated than the Bowden forms and has very feeble concentric sculpture.

ture which is developed only near the antero-ventral margin.

V. solenoides Dall (1), a recent species from the Gulf of Mexico,

(1). Bull. Mus. Compt. Zool., Harvard, vol. 9, p. 127, 1881;
idem, vol. 13, p. 212, pl. 3, figs. 2, 3, 1885.

has the same general facies, but is more elongate, the length being slightly more than twice the width, the slope of the anterior dorsal margin is less steep, the posterior dorsal margin joins the lateral margin by a gentle curve, instead of a sharp angle, the posterior end is more symmetrically arcuate and the ventral margin less curved.

Occurrence.— Upper Cretaceous: Santa Domingo (Abb, 1877):

Lower Miocene: London Hill, Mexico, (Abb, 1881, 1903).



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Subfamily Tindarinæ.

Genus TINDARIA Bellardi.

TINDARIA CALIPICTA n. sp.

Description.— Shell small, polished, veneriform, transversely subovate, moderately inequilateral, well inflated; rounded anteriorly and posteriorly, the anterior dorsal margin slightly below the level of the posterior and rounded more convexly into the symmetrically arcuate base; umbo tumid, relatively prominent, prosogyrate, situated before the median horizontal; external surface sculptured with regular relatively coarse concentric rugae, obsolete on the umbo and near the dorsal margins; ligament external, crithodetic, the area very narrow and shallow, obscurely truncating the proximal portion of the posterior series of teeth; chondrophore absent; teeth in two series, separated by a short, transversely elongated, subumbonal lamella; the concave posterior series numbering fifteen teeth, reduced in size toward the umbo and the dorsal portions of the seven proximal teeth obscured by the immersion of the ligament; anterior series slightly concave, including seven teeth, the distal five heavy and the proximal two abruptly reduced in size; interior of the shell polished; anterior muscle scar placed under the distal extremity of the hinge; relatively large; posterior scar and pallial line obscure.

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Dimensions.- Length, 3.5 mm.; alt., 2.5 mm.; semidiam., 1.2 mm.

Remarks.- The single valve on which this species is based is the first member of the genus to be described from the Tertiaries of the Antillean region. The ligament is assumed to be opisthodetic and therefore theumbo is described as ovesacryate.

T. callipicta is smaller and less elongate than T. oitherea Dall (1)

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(1). Bull. Mus. Comot. Zool., Harvard, vol. 15, pp. 254-275, pl. 8, figs. 1, 1a, 1886.

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and T. amabilis Dall (2) of the recent Antillean fauna, and differs also in hinge characters. The Bowden form appears to resemble

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(2). idem, vol. 18, p. 433, pl. 40, fig. 7, 1889.

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more closely T. panamensis Dall (3) from the Gulf of Panama, but is less produced posteriorly and is without the slight posterior

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(3). idem, vol. 43, no. 6, p. 398, pl. 17, fig. 10, 12.

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compression.

Occurrence.- Deep water; Bowden beds, Bowden, Jamaica.

Superfamily A R G A R I A

Family Limosidae

Genus LIMOSIS Cabb.

LIMOSIS OVATIS Cabb var. SUPRACONCELLATA n. var.

Description.— Shell small, longitudinally subovate, moderately convex, subequilateral, posteriorly slightly produced obliquely; anterior and posterior dorsal margins straight, the posterior usually longer; rounded anteriorly and posteriorly, the curve of the posterior margin less full; umbones prominent, torid, strongly incurved and slightly episthogyrate, subcentral in position; external surface covered with almost equally developed radial and concentric riblets, producing a cancellated sculpture, the concentric riblets showing a tendency toward irregular width, the radials more constant; cardinal area relatively wide, apophytic, interrupted by the small triangular, subumbonal chondrophore; before the chondrophore five or six almost vertical teeth, the proximal tooth placed under the chondrophore, a short edentulous interval separating the anterior series from the four or five more horizontal teeth that constitute the posterior series; muscle scars obscure; inner edge of the interior margin of the valve finely crenulated, the crenulations tending to become obsolete on the posterior margin.

Dimensions.- Length, 5.8 mm.; alt., 3.8 mm.; semidiam., 1.5 mm.

Remarks.- This form is considered, after some hesitation, a variety of L. ovalis Abb (1), described from the Miocene of

(1). Trans. Am. Philos. Soc., new ser., vol. 15, p. 355, 1875.

Santo Domingo. The typical ovalis reaches a larger size and is slightly less oblique. Most shells do not display the obliquity for which "this shell is remarkable", according to the original description: on the contrary, they are but slightly oblique.

On the largest of his specimens the concentric sculpture is exaggerated, while the others have a sculpture closely resembling that of supracancellata. Cady (2) has described a very closely related

(2). Proc. U. S. Nat. Mus., vol. 12, p. 525, pl. 50, fig. 2, 1893.

form, L. subangularis, from the Miocene Diirup bed at Point-apier, Trinidad; in fact, it is so close to the previously described ovalis that it, too, should probably be considered a variety. The Trinidad variety differs from supracancellata by being smaller, slightly more oblique, less convex and by having the concentric sculpture usually more accentuated than the radial, so that the cancellated effect- so conspicuous on supracancellata- is

often negligible. On the whole, the three forms in the order ovalis, ovalis subracancellata, ovalis subangularis constitute a series from large and slightly oblique to small and more decidedly oblique; the differences are, however, slight and the forms apparently variable, so that they might well be considered identical. Dall (1) considered the Bowden and Trinidad specimens identical

(1). Trans. Warner Free Inst. Sci., Philadelphia, vol. 3, pt. 4, p. 607, 1898.

and stated that they may be the same as ovalis.

The recent North Atlantic and West Indian I. minuta Phillipi (1) is typically more oblique, more convex and more finely sculptured.

(2). An. Noll. Sci., vol. 1, p. 67, pl. 5, fig. 7; vol. 2, p. 45.

Occurrence.-- Locality: Bowden bells, Bowden, Jamaica.
(Dall, 1898)

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LIMOPSIS JAMAICENSIS n. sp.

Description.— Shell minute, heavy for the size, suborbicular, convex, slightly compressed in the distal postero-dorsal region; anterior dorsal margin short and direct, posterior dorsal margin longer and sloping gently downward; dorsal portion of anterior lateral margin slightly excavated, the remainder curving broadly and evenly into the ventral margin; posterior lateral margin less broadly curved and passing more abruptly into the ventral margin, producing a slight posterior obliquity; umbones relatively prominent, decidedly inflated; external sculpture of fine, widely separated concentric raised lines, the interspaces being broadest in the central portion of the shell, and less prominent, but more frequent, radial riblets; at the points of intersection of the two sets of sculpture conspicuous irregular blisters, absent in the umbonal region; posterior portion of the narrow cardinal area longer; chondrochore small, triangular; teeth in two discrete series separated by a relatively wide edentulous area, the three teeth of the anterior series heavy, vertical and placed near the dorsal margin; the three posterior teeth weaker, almost horizontal, situated further from the dorsal margin and placed one below the other in a gently curved series; inner margin of the valve faintly crenulated, the crenulations coarsest on the ventral por-

tion of the postero-lateral margin.

Dimensions.- Length, 4 mm; alt. 2.2 mm.; thickness, .5 mm.

Remarks.- This species is represented by a single left valve. The "blisters" at the points of intersection of the radial and concentric sculpture are unusual and give the shell a peculiar appearance. The specimen is very small and is probably an immature individual.

Occurrence.- In the Miocene: Bowden Bed, Bowden, Jamaica.

Family Arcidae

Subfamily Arcinae

Genus ARCA (Linnaeus) Lamarck.

Subgenus ARCA s. s.

ARCA OCCIDENTALIS Philippi.

Arca barbalensis d'Orbigny, 1845 (?), in le la Faune, Hist., Nat.,
polit. y natur. de la Isla de Cuba, Molluscs, p. 515,
(Spanish ed.).

Arca occidentalis Philippi, 1847, Abhild. u. Beschreib., vol. 7,
p. 29, pl. 4, fig. 4.

Arca barbalensis d'Orbigny, 1847, in le la Faune, Hist. Nat.,
polit. et natur. de l'Ile de Cuba, Molluscs, vol.
2, pp. 521, 522, (French ed.).

Arca nova Gray, 1846, Quart. Jour. Geol. Soc. London, vol. 2,
p. 307 (non Linnaeus, 1758).

Arca occidentalis Philippi, 1847, Col. Mus., Serie 2,
vol. 1, p. 447 (Check list).

Arca occidentalis Philippi, 1847, Quart. Jour. Geol. Soc.
London, vol. 22, p. 531.

Arca occidentalis Philippi, 1847, Quart. Jour. Geol. Soc.
London, vol. 22, p. 531.

Arca philippina Philippi, Bull. Simpson, 1901, Bull. N. S.

Conn., vol. 75, pt. 1, pp. 133-134.

Description.— Val. teeth elongate-oblique, sub-parallel; lower anterior brachiodial, some 10 times as long as wide; surface smooth; surface of the ab apices decurrent; surface regularities, prominent, interspersed longitudinally with subconcentric; not lenticularly striated; area dorsally smooth; ligamentum illud maris ex parte continua. Long. 12", alt. 10", diam. 10" (Philippi, 1847)

The specimens at hand are large, transversely elongate, very inequilateral, decidedly broader anteriorly, higher and somewhat posteriorly; dorsal margin straight, equaling the greatest length of the shell; antero-lateral margin with a slight to moderately directed slope; anterior portion of the ventral margin emarginated by a long, narrow byssal gape, posterior portion convex; postero-lateral margin insinuated medially, the portion dorsal to the insinuation more produced; umbones situated at about the anterior fourth of the length, broad, inflated, slightly prosogyrate, with a slight median sulcus, the sulcus broadening toward the ventral margin and forming a wide, shallow depression, the limits of which on the ventral margin coincide with the limits of the byssal gape; posterior beak broad, but well-marked; external surface covered with a fine, irregular, concentric and radial striae in different

portions of the shell (anterior to the umbonal depression), broad, shallow, and bordered and separated by numerous interspaces; in the wide depression very narrow, low, and the wider interspaces with from one to four fine secondary ribs that disappear in the dorsal half of the shell; posterior to the depression the ribs higher and broader, with one or two furrows, the equally wide interspaces containing from two to five secondary ribs; the ribs on the posterior keel very low and divided distally by furrows into portions of irregular width; dorsal to the anterior keel the first three ribs broad and usually furrowed, but the remainder narrow, concentric sections of irregular width lying between the ribs and interspaces; cardinal area broad and long, the subumbonal portion with discontinuous ligament grooves that diverge at an acute angle; hinge long and straight; teeth numerous, becoming longer and slightly oblique distally; anterior and posterior inner margins strongly crenulated, the ventral margin posterior to the pycnia weakly crenulated.

Dimensions.- Length, 35 mm.; maximum alt., 22 mm.; semilength, 17 mm.

Remarks.- The London specimen, which was measured, agrees in every detail with the recent form of wide distribution in the Antillean region. As is to be expected, from the habits of this species, the form is variable with respect to details, but the

several proportions and characters are constant. The length of the two posterior "wings" and the depth of the emargination between them are especially important. From the other known forms the form occidentalis may be differentiated by its elongate form and the character of the radial ribbing. The small A. hesperia Dall (1), of the Florida Channel and Tampa Bay beds, very much

(1). Dall, W. C., Trans. Amer. Mus. Nat. Hist., Philadelphia, vol. 4, pt. 4, pp. 481-482, pl. 33, fig. 11, 1899.

resembles A. occidentalis in many characters, but when compared with occidentalis of the same size, is usually less alate posteriorly, proportionately longer, with a more uniform outline, more delicate and more numerous ribs.

This species apparently is the form which Lister (2) designated "Mytilus Barbadosis, vulgaris, striatus, striis fuscis" - cited

(2). Mem. Nat. Cur., p. 147, no. 42, 1704.

by Lister in his "Natural History of Jamaica". (3) This name was

(3). Voyage to the Islands of Barbadoes, Antigua, St. Christopher and Jamaica; with the Natural History of the last of these Islands, vol. 2, p. 257, no. 9, 1725.

given binomial standing by D'Orbigny in his work on the mollusks of Cuba. Since there is some confusion concerning the date of publication of the two editions of that work it is uncertain whether D'Orbigny's or Philippi's name has the right of priority. The date given on the title-page of the Spanish edition is 1845, but in the text the author refers to publications that did not appear until 1848. If this edition was published in fascicles, like the French edition, the Arcas probably were included in the last fascicle. Although the date of the French edition is usually given as 1853, the fascicles appeared at different times and the one containing the Arcas was probably published about 1857. Although D'Orbigny did not figure haraensis there is no doubt concerning its identity since he stated that it was the form that had been confused with the Mediterranean A. noae Linnaeus. Until more definite information is available it is advisable to retain Philippi's low-~~land~~ name.

Occurrence.- Under Oligocene.- Santo Domingo (Guppy, 1874, 1875). Barro Colorado (Dall, 1898). Lower Miocene: Bonin beds, London, Jamaica (Guppy, 1874, Dall, 1908). Oligocene.- Alcornutchie formation, Florida (Dall, 1900); ^{Trinidad (Guppy 1874)} Pleistocene.- Florida Keys, Yucatan, and most of the West Indian Islands (Dall, 1898). Panama (Brown and Pilsbry, 1913). Recent.- Hatteras to Santo Marta and Bartholomew, east to Bermuda and off the west coast of North America in 1 to 20 fathoms.

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ARCA UMBONATA Lamarck.

Arca umbonata Lamarck, 1819, Anil. sans vert. vol. 6, p. 57;
idem, 2d ed., 1827, p. 112.

Arca umbonata Lamarck, Philippi, 1847, Abbild. u. Beschreib.,
vol. 5, p. 1, pl. 176, figs. 5a-c.

Arca nose Stilesen, 1800, Mathematisches Inst., Checklist, An. Nat.
Shells, p. 2. (non Linnaeus, 1758)

Arca imbricata Webb, 1877, Trans. Amer. Philos. Soc., New Ser.,
vol. 15, p. 331 (as of Bruguière, 1789)

Arca imbricata Webb, 1881, Jour. Acad. Nat. Sci., Philadelphia,
2d ser., vol. 3, p. 576 (as of Bruguière) ex cl. (synexcl.)

Arca imbricata Heilprin, 1887, Trans. Amer. Free Inst. Sci.,
Philadelphia, vol. 1, p. 118, (as of Bruguière, 1789)

Arca listeri ? Heilprin, 1887, idem, p. 118, (as of Philippi,
1847)

Arca imbricata Dall, 1889, Bull. U. S. Nat. Mus., Vol. 37, p.
40 (as of Bruguière, 1789)

Arca umbonata Lamarck, Dall, 1890, Trans. Amer. Free Inst.,
Sci., Philadelphia, vol. 3, pt. 4, pp. 620-621, pl. 38,
figs. 4, 4a.

Arca umbonata Lamarck, Dall & Simmon, 1901, Bull. U. S. Nat.
Comm., vol. 20, pt. 1, p. 460.

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Area umbonata Lamarck, Bull, 1815, Bull. U. S. Nat. Mus., no. 90, p. 118, pl. 17, figs. 6, 8.

Description.-- "A. testa transversim oblonga, ventricosa, angulato-sinuata, fasciis substriata; umbones magni, arcuatis; latere postico brevissimo." (Lamarck, 1815)

The Bowden specimens are small, subrhomboidal, much inflated, very inequilateral; anterior margin almost at right angles to the long, straight dorsal margin, short, curving below into the ventral margin, which is very slightly arcuate and feebly emarginated anterior to the middle by the small byssal gape; obliquely truncated posteriorly; umbones very tumid, prominent, strongly incurved, epistrophe, placed at about the anterior third of the length of the hinge; posterior keel strong, but not extensively sharp or high; region dorsal to the keel slightly excavated; exterior surface anterior to the posterior keel covered with radial ribs, relatively coarse except in the region of the byssal gape; in the anterior half of the shell one or two fine radiating ribs often present in the interstices; the radial ribs crossed by weaker, low, irregular concentric ridges, producing a subimbricated sculpture; dorsal to the posterior keel three or four coarse, subnodulous ribs, succeeded by several finer ones; cardinal area very wide, the anterior portion marked by several oblique ligament grooves;

teeth small, numerous, uninterrupted; inner margin smooth except for a few, inconspicuous crenulations on the posterior end.

This species, which comes up to the Recent virtually unchanged, is represented by several small valves. The largest has the following dimensions, - length, 18 mm.; maximum altitude, 8.6 mm.; semi-diameter, 5.6 mm.

Gabb's Santo Domingo specimens labelled A. imbricata Duv. are typical umbonata, but among his Costa Rican Pliocene imbricata are some A. (Calloarca) randsi Melin.

Occurrence. - Upper Pliocene. - Tampa silver beds, Florida (Dall, 1898, 1915). Chipola marl, Florida (Dall, 1902). Oak Grove sand, Florida (Dall, 1898). Santo Domingo (Gabb, 1877).
Lower Pliocene: Bowden beds, Bowden, Jamaica.

Pliocene. - Limon, Costa Rica (Gabb, 1881).

Pleistocene. - Florida Keys and Antilles (Dall, 1898).

Recent. - Vatteras to Southern Brazil, throughout the Antilles and east to Bermuda in less than 50 fathoms.

ARCA BOWDENIANA Dall.

Arca bowdeniana Dall, 1893, Trans. Wagner Free Inst. Sci., Philadelphia, vol. 7, pt. 1, pp. 322-323, pl. 73, fig. 12.

Description.- "Shell small, inflated, somewhat irregular, very inequilateral, the beaks almost posterior; dorsal slope conspicuous; its outer border with a stout keel and its surface somewhat excavated; beaks small pointed, prosogyrate; cardinal area wide lozenge-shaped, flattish, with a few grooves for the rosilium forming a small lozenge near the beaks; sculpture as in A. umbonata, the imbrications close and subnodulous; shell not alate in front and with the anterior margin nearly vertical from the hinge-line; posterior end obliquely truncate, the basal angle most extended, the dorsal one forming nearly a right angle; anterior teeth ten, posterior twenty-seven, with no noticeable hiatus in the line, the teeth resembling those of A. parvius but proportionately larger; interior smooth, the posterior end with a few flutings, the rest of the margin entire; the basal fore-edge narrow and its margins encroaching only moderately on the valves. Lon. 15, alt. of hinge-line 6, of beaks 8, diam. (greatest posteriorly) 9 mm."

"This odd little shell is peculiar in being narrower near

the very anterior beaks and almost about the middle of the posterior slope. It appears to be easily discriminated from the other species of this variable group known to the region." (Dall, 1904)

Type locality.-- Bowden, Jamaica.

The statement, in the body of the description, that the "beaks are almost posterior" involves a typographical error; the beaks are anterior in position, being situated at about the anterior third of the length of the hinge. The posterior keel is very strong and sharp and the region dorsal to it is sharply excavated. The sculpture is very delicate. Interior to the posterior keel the imbricated or cancellated effect is produced by the superposition of strong, somewhat irregular concentric ridges on weaker, but prominent, close-set radiating ribs of fairly constant width, except in the extreme anterior region where they are wider; dorsal to the posterior keel there are about three strong radial ribs, on which the concentric ridges are but feebly developed, followed by two or three narrow ribs.

A number of detached valves of A. bowdeniana are present in the collections, of these the largest is 17 mm. long, 8.5 mm. high and 4.5 mm. in semidiameter. Although there is the usual variation in regularity and proportions of shape, certain features are constant, such as the sharpness of the posterior keel, the depth of excavation of the region dorsal to the keel and the fine,

subimbricated sculpture. Typically the posterior margin is conspicuously produced below.

Remarks.- A. bowdeniana is very closely related to the associated A. umbonata. There appears, however, to be constant differences between them. A. bowdeniana is smaller and usually less inflated, has slightly more prosoprate beaks, finer sculpturing, larger teeth, a somewhat narrower cardinal area, a stronger posterior keel- which forms at the lower end of the posterior margin a usually prominent "wing"- and the region lateral to the posterior keel is more excavated. But perhaps the most notable distinction lies in the differences in diameter of the various regions of the shell. In the case of bowdeniana the maximum diameter is at about the middle, i. e., posterior to the beaks, the diameter rapidly decreasing anteriorly across the beaks to the anterior margin; while umbonata has the greatest diameter at, or just posterior to, the beaks and from that point the decrease anteriorly to the margin is even more rapid.

A. grammatoponta Dall (1), of the Tampa silted beds zone, is much larger, less inflated, the slope from the umbo to the anterior margin is less steep and the posterior slope is not as

(1). Dall, W. H., Bull. U. S. Nat. Mus., no. 22, p. 112, pl. 23, figs. 1, 2, pl. 22, fig. 3, 1915.

deeply excavated.

Occurrence.- Lower Pliocene: Bowden beds, Bowden, Jamaica.
(Dall, 1898, 1907). Pliocene.- Limon, Costa Rica (Dall, 1908).

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ARCA BREVIVENTRIS n. sp.

Description.- Shell very small, elongate, moderately inflated, trapezoidal in outline; both extremities of the dorsal margin angular; asymmetrically rounded anteriorly, truncated posteriorly; dorsal and ventral margins parallel; the ventral ear is slightly contracted medially by the short, narrow basal lobe; umbones relatively high and prominent, inflated, placed at about the anterior third of the length; posterior ridge low and inconspicuous; surface sculpture typically of many clear-cut, rounded radial ribs, very narrow in the median portion of the shell and widest in the extreme anterior and posterior portions; the ribs may be finely and faintly nodulated by numerous low, concentric raised lines; cardinal area very wide, with usually a single set of fine ligament grooves that diverge from the umbones at an acute angle; hinge almost as long as the shell, straight; teeth uninterrupted medially, fine, numerous; inner margin of the shell with relatively deep granulations except in the median ventral portion.

Dimensions.- Length, 10 mm.; alt., 5 mm.; semidiam., 2 mm.; length of hinge 7 mm.

Remarks.- The members of this species- the most abundant of the true Arcas- constitute a highly variable group. Although the typical trapezoidal outline is never lost, some specimens are

low and elongate, while others are higher and shorter. There is also considerable variation in the amount of inflation- some of the largest individuals being much more inflated than the typical form. Relative excess of inflation is concomitant with excessive height and a less flattened posterior slope. The radial ribs may be flat and feebly sculptured, instead of rounded and sharply chiseled. Occasionally the ribs are dichotomous and in the region in line with the narrow basal edge, where the ribs are very narrow, secondary even narrower ribs are often present. There is such a profusion of individuals that it seems necessary to assume that the largest specimens are actually adult.

A. nerryi is much smaller than any associated true Arauc. From the young of bowdeniana, occidentalis and umbonata it differs by the absence of a sharp, well-defined posterior ridge, as well as in shape and sculpture. A. (Stapheroc) donacia is of about the same size or slightly smaller, but, besides the obvious differences that place the two in separate subgenera, the one is donaciform and the other trapezoidal.

This species is named for Prof. L. W. Berry, of the Johns Hopkins University, whose work has added greatly to the knowledge of the Atlantic and Gulf Coastal Plains.

Occurrence.-- Lower Miocene: Bowden beds, Bowden, Jamaica.

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Subgenus *Barbatia* (Gray) Adams.

Section *Aear* (Gray) Adams.

AREA (AEAR) *RETICULATA* Swelin.

Area reticulata etc., Chemnitz, 1784, Bonch. Cab., vol. 7, p. 105,
pl. 54, fig. 540.

Area reticulata Swelin, 1791, Syst. Nat., vol. 8, p. 5711.

Area squamosa Lamarck, 1819, *Anim. sans Vert.*, vol. 8, p. 75,

Area domingensis Lamarck, 1819, *Ibid.*, p. 10.

Area clathrata Lamarck, 1819, *Ibid.*, p. 16.

?*Area arafata* Broderip and Sowerby, 1859, Zool. Journ., vol. 4,
p. 365.

Area livaricata Sowerby, 1853, Proc. Zool. Soc., London, for 1853,
p. 18.

Area livaricata Sowerby, *Reeve*, 1844, Bonch. Icon., *Area*, pl. 10,
fig. 108.

Area reticulata Chemnitz, Lamarck, 1855, *Anim. sans Vert.*, 2^e ed.,
pp. 475-476.

Area squamosa Lamarck, Suoy, 1874, Geol. Mag., Decade 2, vol. 1,
p. 443 (check list).

Barbatia (*Aear*) *reticulata* Swelin, Dall, 1898, Trans. Amer. Zool.
Inst., Sci., Philadelphia, vol. 7, pt. 4, p. 329.

Area reticulata Swelin, Dall & Simpson, 1901, Bull. U. S. Fish
Comm., vol. 20, pt. 1, p. 460/

Barbatia (Acar) reticulata Melin, Ball, 1915, Bull. U. S. Nat. Mus., no. 90, p. 120/

Description.-- "A. testa subrhomboida fere satim striata alba; nistibus approximatis, valva cordata." (Melin, 1901)

The Bowden specimens are small, thick-shelled, subrhomboidal, moderately inflated; rounded anteriorly, obliquely truncated posteriorly; umbones low, broad, strongly incurved, one or more, placed at about the anterior third of the length; posterior ridge well defined, subangular; external surface sculptured with strong, somewhat irregular concentric ridges, separated by deeply-channelled narrow grooves, and less prominent, but more numerous, radiating ribs; the concentric ridges often giving an imbricated effect, especially on the posterior ridge and occasionally showing superimposed fine concentric striae; posterior slope usually feebly sculptured; cardinal area narrow, excavated, becoming slightly wider in front of the umbo, transversely striated; hinge relatively short, gently arched; median teeth short and irregular or absent, posterior teeth more numerous than the anterior and more oblique; muscle scars prominent, the edges being raised above the surface of the shell; inner margin of the valves finely and irregularly crenulated.

Dimensions.-- Length, 10 mm.; alt. 11 mm.; semilength, 5 mm.; length of hinge, 10 mm.

Remarks.- This characteristic species, which has an extended geological range in the Antillean region and its neighbors, is well represented in the Borden fauna. The shape, and the peculiar half-imbricated and reticulated character of the scutellum alone serve to distinguish this species from the other members of the genus.

Occurrence.- Upper Eocene.- Jackson group, Jackson, Mississippi (Dall, 1898). Oligocene.- Tampa silt beds, Tampa, Florida (Dall, 1908, 1915). Chiefla Marl, Florida (Dall, 1908). Matura, Trinidad (Guppy, 1874, "Pliocene"; Dall, 1908). Miocene.- Borden beds, Borden, Jamaica. (Dall, 1908). Pliocene.- Limon, Costa Rica (Dall, 1908). Caloosahatchie Marl, Florida (Dall, 1908); ^{Trinidad (Guppy 1874)} Pleistocene.- Antilles generally (Dall, 1908). Recent.- Batteras to Gulf of Guayaquil and east to Bermuda in 6 to 227 f. Occurs in both deep and shallow water off Batteras; elsewhere in shallow water only.

ARCA (ARAR) PROPLETA n. sp.

Description.— Shell small, heavy, moderately elongated, well inflated; rounded anteriorly, the curve decidedly convex; posterior end produced below, subrounded above; base slightly arcuate, ascending toward the posterior end; umbones tenid, high and broad; posterior ridge prominent, rounded; ventral half of the shell with a slight median depression; external surface sculptured with numerous fine radial ribs separated by narrow interspaces except on the posterior slope where the ribs are wider and the interspaces of about the same width; the ribs occasionally dichotomous; concentric sculpture developed throughout by nodulations on the ribs; cardinal area narrow, excavated, widening slightly in front of the umbo, transversely striated; hinge with a continuous series of teeth, the teeth oblique at the extremities, small and vertical medially; inner margin of the valve without definite creulations.

Dimensions.— Max. length, 4 mm.; max. alt. 5.5 mm.; cardinalium 1.8 mm.; length of hinge, 4.5 mm.

This species is described from a single valve. It is immediately distinguished from A. reticulata by its less elongate form, more rounded posterior ridge and decidedly finer sculpture. The Jaloschatchkie A. millifila Hall(1) is larger, proportionately

(1). Trans. Amer. Mus. Nat. Hist., Philadelphia, vol. 7, pt. 6, p/ 1622, pl. 16, figs. 21, 24, 1887.

higher and has a straighter base, fewer and less conspicuous
reticulated striations and steeper sides.

Geographical Distribution.—Common in the : British Isles, France, Germany.

Section *Galloarea* Gray.

AREA (*CALLICATA*) *SAFURA* Caelin.

Area candida Felblinger Schenitz, 1874, *Conch. Leb.*, vol. 7, p.
195, pl. 55, fig. 542.

Area candida Caelin, 1791, *Syst. Nat.*, vol. 6, p. 3111.

Area jamaicensis Caelin, 1791, *idem*, p. 3112.

Area Felblingerii Brunière, 1897, *Ann. Math.*, 6, 105.

Area candida Schenitz, *Albion*, 1845, in *de la* *Albion*, *Math.*
fig., *polit.*, *Math.*, *de la* *Albion*, *Albion*,
p. , (Spanish ed.); 1853, *idem*, vol. 2, pp. 319-320,
(French ed.).

Parbatia *Conch.* Webb, 1875, *Trans. Am. Philos. Soc.*, new ser.,
vol. 15, pp. 254-255.

Area imbricata Webb, 1881, *Jour. Acad. Nat. Sci.*, Philadelphia,
2nd ser., vol. 3, p. 578, (as of *Brachidontes*) ex parte. (syn excl.)

Parbatia (*Galloarea*) *candida* Caelin, 1891, 1898, *Trans. Amer.*
Fr. e. Inst. Sci., Philadelphia, vol. 7, pt. 4, pp.
626-627.

Area candida Caelin, Dall & Simpson, 1901, *Bull. U. S. Fish Comm.*,
vol. 20, pt. 1, p. 460.

Description.- "A. testa pellucida rhombicali anteriori pro-
ducta posteriori truncata decussatim striata; umbones remotis, mar-
gine posteriori hians; hista cristo ciliata." (Gmelin, 1791)

The Borden specimens are of medium size, subtrapezoidal in outline, somewhat compressed; asymmetrically rounded anteriorly, posterior end truncated above, ventrally prolonged below; posterior ridge low and broad; umbones low, situated at about the anterior fourth of the length; external sculpture of numerous, sharply but closely spaced radial ribs of different width, being narrowest in the central portion of the shell; the ribs occasionally rhebo-
tamous or the interspaces with secondary, interrelated ridges; ribs nodulated at irregular intervals, the ribs being widest and strongest, the intercostal spaces widest and the nodules most prominent on and behind the posterior ridge; cardinal area of val-
ium width, crossed by several diverging ligament grooves; teeth in an uninterrupted series; but the median teeth very short; inner margins with irregular, inconspicuous crenulations.

Dimensions.- Length, 26.5 mm.; alt., 13 mm.; semidiam., 5.8 mm.; length of hinge, 15 mm.

Remarks.- Numerically this species is well represented, but the majority of the specimens are much smaller than the one meas-
ured. Some irregularity in shape and proportions is noticeable. A. candida may be recognized by its somewhat compressed valves and

beaded radial ribs, which are especially prominent on the posterior slope.

The Santo Domingo form which I have described as Barbatia bonaszi apparently is canalis, although one of his two types has sculpture that is finer than usual and both have a less sharp posterior ridge and therefore a less excavated posterior slope than the average canalis. As mentioned above in the discussion of A. umbonata, Lobb's Costa Rican Pliocene material under the name of imbricata includes some forms which should be referred to canalis.

Occurrence.-- Oligocene.- Chicula coal, Florida (Dall, 1892). Santo Domingo (Lobb, 1875). Lower Miocene: Bowden beds, Bowden, Jamaica (Dall, 1892). Pliocene.- Hilton, Costa Rica (Lobb, 1881). Trinidad (Dall, 1892). Pleistocene.- The Antilles generally (Dall, 1892). Recent.- Bahamas to southern Brazil in less than 50 fathoms.

ARCA (CALLOARCA) ENDOLEMIA n. sp.

Description.- Shell small, elongated, subtrapezoidal, decidedly inflated; dorsal and ventral margins subparallel, the ventral margin slightly arcuate, with a broad, feeble insinuation toward the posterior end; rounded anteriorly; posteriorly truncated, produced below; umbones tumid, broad, situated at about the anterior third of the length; posterior ridge rounded, but prominent; external surface sculptured with numerous radial ribs; the extreme anterior ribs separated by interspaces of virtually the same width, the succeeding ribs narrower, with the interspaces wider than the ribs and often bearing a fine secondary radial; toward the posterior ridge the ribs become wider and are separated by narrow impressed lines; on the posterior slope ribs few and broad, interspaces of about the same width; the radials bearing obscure elevations along concentric lines, except in the anterior portion of the shell where the concentric sculpture forms definite nodules; cardinal area moderately wide, the posterior portion with obliquely directed ligament grooves; hinge bearing about twenty-five teeth, the posterior ones notably oblique, the anterior less oblique, the series uninterrupted medially; posterior and anterior inner margins obscurely crenulated.

Dimensions.- Max. length, 10 mm.; alt., 5.5 mm.; semidiam., 2.5 mm.; length of hinge, 6.5 mm.

Remarks.- A. endomys is represented by one valve. None of the characters suggest that its proper place is in the section Apar, but the cardinal area is too wide. It differs from the genus of A. radialis of the same size by being more elongate, but less produced at the postero-ventral angle, more inflated, with higher umbones and less conspicuously developed concentric sculpture.

Occurrence.- Lower Miocene: Bowden beds, Bowden, Jamaica.

ARCA (CALLOARCA) DISTINGUA n. sp.

Description.- Shell small, moderately elongated, well inflated; anterior end rounding rapidly into the base; hinge almost straight very feebly emarginated ventrally, closed toward the posterior end; posterior margin produced below, obliquely truncated above; umbones conspicuous, broad; posterior ridge rounded; external sculpture consisting of numerous, fine radial ribs, associated with conspicuous, delicately sculptured, square or slightly elongated, nodules throughout; as usual, anteriorly and posteriorly the ribs and interspaces wider, especially on the posterior slope; cardinal area wide for the size of the shell, with obscure transverse striations in the anterior and median regions and deeper oblique grooves posteriorly; hinge-teeth forming a continuous series, the teeth relatively heavy, normal in position; anterior and posterior inner margins obscurely crenulated.

Dimensions.- Max. length, 6.5 mm.; alt. 4.8 mm.; cardinal., 1.8 mm.; length of hinge, 5 mm.

Remarks.- The distinguishing feature of this species, which also is represented by only a single valve, is the delicate, reticulated sculpture, by which feature alone it may be separated from the associated *Calloarcas*. Because of the character of the

sculpture it externally bears a closer resemblance to A. (Ajar)
- propertus than to either gambellii or andersoni, but it differs from
both it differs from that species by being more regular in outline,
more elongated, with a more delicate and more regular sculpture; more-
over, there is the difference in the cardinal areas which places
the two- perhaps unnaturally- in different sections.

Occurrence.- Lower Cretaceous: Broken bed, Devon, Jamaica.

ARCA (SALICARCA) INNOVATA n. sp.

Description.- Shell of medium size, high, somewhat compressed, irregular; posteriorly obliquely truncated above and produced below; irregularly rounded anteriorly; anterior portion of the ventral margin distorted by the long, ridge by sail shape; umbones relatively low, broad, decidedly prosoprate, at about the anterior third of the length; posterior ridge prominent, the region behind the ridge being excavated; external surface sculptured with numerous, very narrow, irregular radial ribs, occasionally dichotomous and the interspaces occasionally bearing interpolated narrower secondary ribs; interspaces usually narrower than the ribs; the posterior slope sculptured with four ribs much coarser than the others; concentric sculpture of irregular growth lines and occasional raised lines, the two producing in certain portions of the shell a feeble semi-reticulate sculpture; cardinal area relatively short and wide, conspicuously marked by six or seven concentric ligament grooves; hinge gently arched; anterior teeth irregular, median teeth very short, almost obsolete, posterior teeth large, oblique; inner margin of the shell smooth or with faint crenulations.

Dimensions.- Length, 31.5 mm.; alt. 22 mm.; semidiam., 7.8 mm.; length of hinge 12 mm.

Remarks.- Several valves are referred to this species, among them one which is not typical since it is more produced posteriorly and the cardinal margin is longer behind the umbo. It is to be expected, however, that so irregular a form should be variable.

A. inusitata may be recognized by its irregular, distorted shape, prominent byssal groove, excavated posterior slope and numerous, fine radials. Several closely related species have been described from various localities. A. irregularis Dall (1), a Tampa siler and Calopachichia form, is larger, with umboes that are

(1). Trans. Warner Free Inst. Sci., Philadelphia, vol. 7, pt. 4, pp. 313-324, pl. 73, fig. 3, 1900.

more posterior in position and coarser ribs. A. marginata Conrad (2), from the Miocene of Florida and the Miocene of Virg-

(2). Nov. Med. Ter. U. S., p. 54, pl. 23, fig. 1, 1889/

land, is larger, with lower, less inflated umboes, a broad, low posterior ridge and an unexcavated posterior slope. The Tampa siler A. arcata Neilson (3) is higher, more inflated, less regular

(3). Trans. Wagner Free Inst. Sci., Philadelphia, vol. 1, p. 118, pl. 16, fig. 65, 1887.

in outline, with a less prominent posterior ridge and less excavated posterior slope.

Occurrence.- Localities: Berlin, Bonn, Bonn, Bonn.

Section *Stenobrea* n. sect.

Etymology.-- στενός - narrow; area.

Shell small, reticulately sculpted; umbones almost terminal, strongly procorate; cardinal area narrow, inversed, long, entirely or almost entirely opisthodetic; hinge-teeth in two series, the anterior series short, thickened, more or less irregular, sub-umbonal in position, the upper thickened margin bevelled slightly behind the umbo: posterior series longer and normal; the two series continuous or interrupted by the evanescence of the teeth at the anterior end of the posterior series.

Type.-- *A. dentera* n. sp.

Three new species are referred to this section; of these dentera and subcandeida have an uninterrupted series of teeth, with the anterior series notably thickened, while adult individuals of modioleida usually have a medial, wide edentulous area. *A. subcandeida* has a very small portion of the cardinal area before the umbones and in the case of the other two species the cardinal area is entirely opisthodetic. From the above statements it is evident that this section is not sharply differentiated, but forms an intergrading series with other sections. The shape of dentera and subcandeida suggests modioleida; in shape and in the possession of an interrupted dental series modioleida resembles modioleida and also Cucullaria, but the cardinal area does not extend in front

of the umbo. The cardinal area of A. subrotunda extends in front of the umbo for a very short distance and in that respect it bears a resemblance to some Stenocarcas, but this species has the peculiar hinge of dentata, the type of the section. The division of the teeth into a short, more or less irregular anterior series and longer, normal posterior series is somewhat similar to that found in the section trilineatus of the subgenus Stenocarcas, but the general facies precludes the possibility of finding a place for these forms among the Arctinas. With regard to hinge elements Stenocarcas appears to have much the position among the Arctinas that Arctia has among the Scapharcas.

Calloarca (Calloarca) bowdeni n. sp.

Description.- Shell small, well inflated, decidedly inequilateral; almost subtriangular, truncated anteriorly, rounded and broadly rounded posteriorly, base gently convex; umbo small, broad, relatively prominent, strongly prosogyrate, placed almost at the anterior fifth of the length; posterior ridge broad and low; external sculpture of numerous, narrow, weakly sculptured radial ribs of varying width, being widest posteriorly; concentric sculpture of irregularly spaced incremental lines and striae, slightly affecting the radial ribs; cardinal area entirely opisthodetic, narrow, impressed, crossed by three oblique, slightly raised lines; anterior series of teeth consisting of six thickened, irregular teeth placed under the umbo, the thickened area ceasing abruptly behind the umbo and succeeded immediately by the posterior series, the latter numbering twenty-three teeth which increase in size toward the distal end and at the end of the series become oblique in position; inner margin of the valve smooth.

Dimensions.- Length, 16 mm.; alt., 10.5 mm.; semidiam., 4.1 mm.; length of hinge, 9 mm.

Remarks.- Only a single valve of this interesting form is present. The shape and sculpture suggest *Calloarca*; the hinge *Arrina*; but the cardinal area is unique.

Occurrence.- Lower Miocene: Bowden beds, Bowden, Jamaica.

A. (A.) dentata n. sp.

Description.-- Shell small, transversely subelliptical, higher and more prolate posteriorly, slightly inflated; posterior dorsal margin direct; rounded anteriorly, the curve of the upper portion being less convex; subtruncated anteriorly; ventral margin sloping gently downward toward the posterior end; umbones very low and flat, strongly prosogyrate, situated at about the anterior fifth of the length; posterior ridge low and very broad in the umbonal region, becoming obsolete toward the margin; external surface sculptured with numerous fine radial ribs, narrowest in the region below the umbo and widest posteriorly; the ribs separated by fine impressed lines except on the posterior slope where between some of the ribs are interspaces as wide as the ribs themselves; concentric sculpture of regular, closely spaced concentric impressed lines, overriding the radials, thus producing a conspicuous reticulated sculpture and causing the ribs on the posterior slope to be nodulated; cardinal area narrow, impressed, almost entirely opisthodetic, the very short portion in front of the umbo being widest; hinge as in A. dentata n. sp., but with five teeth in the anterior series and eighteen in the posterior; inner margin of the valve smooth.

Dimensions.-- Length, 13 mm.; umbonal alt. 7.6 mm.; max. alt., 8.2 mm.; semidiam., 2.8 mm.; length of hinge, 7 mm.

Remarks.-- This species, also represented by a single valve, is closely related to A. dentata and undoubtedly belongs in the same genetic series. Differences between them involve factors of proportions, outline and sculpture, aside from the difference in size, which may be of no significance. subcardata is lower, more compressed, especially posteriorly, the base has a decided slope; the umbo is lower, less inflated, more anterior in position; the sculpture sharper and more obviously reticulated and the cardinal area extends in front of the umbo.

Occurrence.-- Lower Miocene: Bowden beds, Bowden, Jamaica.

NUCA (NUCULA) NUCULIFORMIS n. sp.

Description.- Shell small, thin, noduliform, somewhat compressed, very inequilateral, produced and higher posteriorly; anterior dorsal margin direct, low, anterior end rounded below, subtruncate above; rounded posteriorly, the curve being less convex above; ventral margin sloping downward posteriorly, slightly contracted medially; umbones very low, almost terminal; posterior ridge not well defined distally, but high and broad in the umbonal region; sculpture of low radials, fine and separated by impressed lines in the region before the posterior ridge, coarser, swollen and separated by as wide or wider interspaces behind the posterior ridge; concentric sculpture of fine concentric impressed lines, as well as irregular incremental lines, producing a reticulated sculpture on unworn portion of the shell; cardinal area very narrow, entirely episthodetic, deeply impressed, with a low median ridge extending from the anterior end of the area to its ventral margin at about the middle of the posterior series of teeth; anterior teeth numbering four to six, slightly oblique, more or less irregular, subumbonal in position, medial teeth very short and weak, or obsolete, producing a long edentulous gap; about eight oblique teeth at the distal end of the posterior series; inner margin of the valve smooth or minutely crenulated.

Dimensions.- Length, 10 mm.; alt. in umbonal region, 4.1 mm.; alt. in posterior region, 6 mm.; semidiam., 1.9 mm.

Remarks.- The peculiar modiolus-like form of this small species at once distinguishes it from the co-existing ones. It is represented by a number of valves; several being slightly larger than the type. The shape suggests *Calloarca* and the hinge *Modiolaria*, but the peculiarities of the cardinal area connect it most closely with the section *Stenoarca*. In the case of this species the remarkable features of the cardinal area are even more strongly emphasized than in the other two species of the section. The cardinal area is entirely opisthodetic, exceedingly narrow and so deeply impressed as to be almost internal; indeed, if any portion of the ligament occupied the area below the median ridge it may very well have been entirely internal. The teeth are typical of the section in that they are divided into two series, but the teeth in the middle of the hinge are very weak or entirely obsolete, leaving only the irregular anterior teeth and the oblique, regular teeth at the distal end of the posterior series.

All of the valves are more or less worn, so that the sculpture, which is never prominent, is often faint. Several individuals are less inflated throughout and more compressed in the posterior dorsal region than the typical form. *A. submodiola* is larger, the posterior ridge is less prominent proximally, the slope of the ventral margin less steep, the anterior margin not produced below and the sculpture coarser.

Occurrence.- Lower Silurian: Bowden beds, Bowden, Jamaica.

Section Fossularca Cossmann.

ARCA (Fossularca) ADAMSI Dall.

Arca coelata Conrad, 1845, Fos. Nat. Hist. U. S., p. 31, pl. 72,
fig. 2.

Arca coelata Conrad, DuRoi and Holmes, 1857, Plioc. Fos. South
Carolina, p. 22, pl. 4, figs. 6, 6a.

Not A. coelata Reeve, 1844.

Arca Adamsi Shuttleworth, Tuxey, 1874, Geol. Mag. Decad. 2, vol.
1, p. 443 (check list).

Arca Adamsi Shuttleworth, Dall, 1893, Bull. Mus. Comp. Zool.,
Harvard, vol. 12, p. 243,

Arca Adamsi (Shuttleworth Mus.) Smith, 1898, Jour. Lin. Soc.,
London, Zool., vol. 20, p. 499, pl. 30, figs. 6, 6a.

Barbatia (Fossularca) Adamsi (Shuttleworth) Smith, Dall, 1893,
Trans. Wagner Free Inst. Sci., Philadelphia, vol. 3,
pt. 4, pp. 629-630.

Arca adamsi Smith, Dall & Simpson, 1901, Bull. U. S. Fish Comm.,
vol. 20, pt. 1, p. 461.

Barbatia (Fossularca) Adamsi Smith, Dall, 1915, Bull. U. S. Nat.
Mus., no. 90, p. 121.

Description.- "Trapezoidal, disk widely and not profound-
ly, contorted; ribs numerous, prominent towards the base, tuberc-

culated, ascended anteriorly and posteriorly; posterior slope depressed; umbos acutely angulated behind; basal margin slightly arched; posterior margin bilobely truncated; beaks approximate." (Conrad, 1845)

".....Its simulated ribs of trailing blisters give it a remarkable similar appearance to Arca laticosta, which however has real ribs." (Dall, 1886)

The Bowden specimens are small, moderately inflated, subtrapezoidal in outline, slightly inequilateral; rounded anteriorly, obliquely truncated posteriorly, ventral and dorsal margins parallel, the ventral margin very slightly contracted apically; posterior ridge low and broad; umbones relatively low, broad, placed slightly anterior to the median horizontal; external sculpture of "blisters" more or less connected radially and concentrically, forming a delicate cancellated sculpture; beneath the blisters, which are invariably partially or even entirely removed, are faint, slightly elevated radial and concentric lines, as well as irregularly spaced concentric lines of growth; apical area narrow, excavated, the ligament located on a subumbonal triangular area; teeth in two series separated by a narrow subumbonal cleftulous space; about fifteen teeth in the posterior series and eight in the anterior; ventral incursions well-defined, bounded by raised ridges which converge toward the umbones; inner margin of the valve usually entire.

Dimensions.- Length, .5 mm.; alt., .1 mm.; semidiam., 2.2 mm.; length of ligre, 5 mm.

Remarks.- When compared with other specimens of this widely ranging species, it is apparent that the Mexican representatives are smaller; the posterior ridge lower; the ventral margin less contracted and the edentulous gap in the hinge shorter. The delicate cancellated sculpture formed by the "trailing blisters", as Dall has happily described them, is very characteristic. The blisters, however, are easily worn off and all of the specimens have only a few of them remaining, the surfaces from which the blisters have been removed being almost smooth. The elevated ridges that bound the muscle scars appear to better advantage on the posterior scar.

Recent specimens of this species apparently were early distributed under the manuscript name of A. alacran. The first Dall was the first, as Miss Gardner has shown, (1) to describe it.

(1). Nov.

Smith, so when the species is finally assigned, it is not until his description until two years later.

Occurrence.- Pliocene.- James Miller beds, Torrey (Dall, 1898, 1915). Chisole Marl, Torrey (Dall, 1915). Salt Grove

1110, Florida (Dall, 1890). Lower Pliocene: Boulders, Bowden,
Jamaica (Dall, 1890). Miocene.- Yorktown Formation, Virginia
(Gardner, Mss.) Dublin Formation, North Carolina (Dall, 1895,
Dall, 1898, Gardner Mss.). Transverse River bed, Georgia (Gardner,
Mss.). Pliocene.- Caloosahatchie Marl, Florida (Dall, 1898).
Lancaster Formation, North Carolina (Dall, 1898, Gardner, Mss.);
North Carolina, (Gardner, Mss.). Jonathan Formation, North Carolina
(Gardner, Mss.), ^{Trinidad (Guppy 1874)} Pleistocene.- Diamond Bluff, North Carolina
(Gardner, Mss.). Labelle, Florida. Recent.- Hatteras to
Fernando Ponce, Brazil and west to Bermuda in 10 to 75 fathoms.

AREA (PUSILLARIA ?) WILLIS Dall.

Buccella (Pusillaria ?) willis Dall, 1890, Proc. U.S. Nat. Acad. Sci., Philadelphia, vol. 5, pt. 4, p. 493, pl. 12, fig. 18.

Description.— "Shell minute, solid, ovate, with rather inflated valves; beaks low in the anterior fourth, approximate; cardinal area short, narrow, smooth, or longitudinally striate, the part occupied by the ligament forming a small excavated triangle with the apex at the beak in each valve; outside nearly smooth, sculpture of faint, irregular, concentric lines, crossed by still fainter coarse radiations which are not pronounced enough to modify the surface; inner margin of the valves smooth; nodular impressions large; hinge short with about three curved anterior and four oblique posterior teeth, the two series separated by a wide gap below the ligament. Len. 2.2, alt. 2.5, diam. 2 mm."

"A single specimen of this curious little shell, with the form of a Buccella, the cardinal margin of a Lissarca, and the teeth of an Area; was found in the sand. It should, perhaps be referred to Lissarca Smith." (Dall, 1898).

Type locality.— Bowden, Jamaica.

Remarks.— Two valves, one from each collection, of this

sessile form are present. It certainly is not a typical *Conchoderma* and probably should be referred to a new section. The umbilicus is almost vertical in position, so that the shell is very sub-lateral. Four anterior and five posterior teeth are present, and in both series the teeth are more closely spaced than in the specimen figured by Dall.

Occurrence.- Lower Pliocene: Bowden beds, Oregon, U.S.A.

Strophomena *Strophomena* *Strophomena*.

Strophomena *Strophomena* *Strophomena*.

Strophomena (*Strophomena*) *Strophomena* Bell.

Strophomena consobrina Goup., 1850, Quart. Jour. Geol. Soc. London, vol. 18, p. 205 (non Goup., 1850).

Strophomena consobrina Goup., 1874, 1881, Nov., Decade 7, vol. 1, p. 117, /4.
(check list) or note, non Goup., 1874.

Strophomena consobrina d'Orbigny, 1841.

Strophomena (*Strophomena*) *Strophomena* Bell, 1846, Trans. Amer. Mus. Nat. Hist., Philadelphia, vol. 7, pt. 4, pp. 815-817, pl. 72, fig. 14.

Description.- "Shell subovate, ovate, oblique, inflated; beaks rather high, strongly bent forward, almost reaching the anterior fourth of the length; left valve larger, with about thirty-four clear-cut, elegantly sculptured radial ribs; the anterior dozen ribs are usually distinct and deeply sulcate; the ribs on the middle of the shell are grooved with one or two shallow, sharp, incised lines; the more posterior ribs are wider and flatter with three or more grooves; those on the posterior dorsal slope are smaller, narrower, and usually have not more than one groove, which is nearly obsolete; the concentric sculpture is of evenly spaced, fine, elevated lines arched in the interspaces and finely nodulat-

ing the anterior ribs; the sculpture is similar on both valves; the anterior end of the shell is rounded, the base arcuate, the posterior end oblique above and produced below; the ends of the hinge-line are insulate; the cardinal area is moderately wide with about three concentric lozenges outlined by the grooving; the hinge-line is straight, the teeth numerous and mostly vertical, the two series not interrupted, the posterior distal teeth tending to become irregular in the adult. Long. of shell 45, of hinge-line 41, alt. 40, diam. 40 mm.; large specimens reach a length of 60 mm." (Hall, 1898).

Type locality.— Bowden, Jamaica.

Angle between the antero-dorsal margin and the antero-lateral margin almost 90° , that between the postero-dorsal and postero-lateral about 115° ; anterior radial ribs about equal to the interspaces, but the posterior ones broader; in the anterior portion of the shell the ribs have a relatively broad and deep sulcus which extends half of the distance from the margin to the umbo; toward the central portion of the shell the sulcus becomes only the distal third or fourth of the ribs and becomes progressively shallower and narrower until in the central portion of the shell it is merely a sharp line (one or two of which may be present); ribs immediately anterior to the posterior slope broader and having three or four inconspicuous lines; those on the posterior

slope low, flat, relatively broad, and with one or two, usually faint, lines; closely and evenly spaced concentric lines present, producing nodules on the ribs, except on those on the posterior slope and a few immediately anterior to it, the nodulations being most conspicuous on the proximal half of the ribs; inner margin of the shell deeply crenulated.

Dimensions.- Length, 52 mm.; alt., 15.5 mm.; acutulum., 20 mm.; length of hinge-line, 40 mm.

Remarks.- Individuals of this species are very abundant, in fact, it is the most abundant Arca, and all stages of growth are represented. Young forms have a shape that is noticeably different from that of the adults; the upper part of the posterior lateral margin is not obliquely truncated or the truncation is not pronounced and the lower part of the same margin is not so much produced, so that the angle between the postero-dorsal and postero-lateral margins is less obtuse, and the entire posterior lateral margin straighter. Other differences between young and adult are apparent when details of sculpture are considered. In adolescent shells the sulcus appears on only a few of the anterior ribs and the lines on the posterior ribs disappear; while on young shells the ribs in even the extreme anterior portion of the shell are not sulcated, in other words, there is a progressive diminution in the number of anterior ribs that display sulcation. Some immature

forms, left valves in particular, are more inflated than the typical form and have more deeply channelled interspaces.

This is the species which Cuvier identified as A. consobrina Cuvierby (not A. consobrina d'Orbigny), which was described from Santo Domingo. The relations between halimonta and Cuvier's consobrina and the question of nomenclature is discussed under the following variety.

Occurrence.-- Upper Eocene.-- Turasso (Dall, 1898) Lusana, Venezuela (Cuvier, 1874). Lower Eocene: Boulder beds, Jordan, Jamaica. (Cuvier 1866, 1874; Dall 1898).

Area (consobrina) consobrina var. WILLIAMSII n. nom.

Area consobrina Sowerby, 1850, Quart. Jour. Geol. Soc. London,
vol. 5, p. 52, pl. 12, fig. 12.

Area (Ansleri) consobrina Sowerby, Gabb, 1877, Trans. Am. Philos.
Soc., new ser., vol. 15, p. 257. (syn. excl.)

Area consobrina Sowerby, Moore, 1878, Geol. Mag., Ser. 5, vol. 14
1, p. 447 (check list), ex parte.

Area consobrina Sowerby, Turb., 1876, Quart. Jour. Geol. Soc.,
London, vol. 32, p. 531.

Not A. consobrina d'Orbigny, 1844.

? Area cf. consobrina Moore, Foule, 1904, Jahrb. N.-W. Geol. Reich-
sanstalt, vol. 58, pp. 717-718, pl. 27, fig. 1.

Not A. consobrina Sowerby of Moore, 1886 (= A. pallionata Wall.)
or Gabb, 1881.

Description.— "Testa oblonga, obliqua, aequivalvis, radia-
tim costata, lateribus superne angulatis, antice infra rotundata,
postice rotundato-angulato; costis externis, numerosis, plerum-
que quadratis, et decussatis, ad basin subcostae divisae, anti-
cis fere laevibus, planulatis; area cardinali latiusulca." (Sow-
erby, 1850).

Type locality.— Santo Domingo.

Shell large, subtrapezoidal, the length more than one and one-half times the height, inflated; umbones relatively low and flat, strongly bent forward, situated at almost the anterior third of the length; angle between antero-dorsal and antero-lateral margins about 90°, that between postero-dorsal and postero-lateral margins about 130°; anterior lateral margin rounded; posterior lateral margin obliquely truncated above and produced below; anterior half of ventral margin subparallel to the dorsal margin, anterior half gently arcuate; external sculpture the same as on the typical halidonata; cardinal area, hinge and interior margin as in halidonata.

Dimensions.-- Length, 70 mm.; alt., 44 mm.; width, 91 mm.; length of hinge-line, 18 mm.

Remarks.-- It is here proposed to consider Area consobrina Sowerby a variety of A. halidonata Dall. Although Sowerby's description is brief and inadequate, the accompanying figure is satisfactory so that there is little doubt as to the salient features of his consobrina. Unfortunately, however, as Dall has pointed out (1), consobrina had been used in 1844 by M'Orbigny (2) for a

(1). Trans. Wiener Free Inst., 1841, Philadelphia, vol. 5, pt. 4, p. 347, 1843.

(2). Pal. de France, (Terrine Inst.) vol. 2, p. 212, pl. 511, figs. 1-7, 1844.

form from the "varieties" of the Paris Basin. (For example, some is occidentalis, although D'Arbois's area occidentalis is a trullata).

In the collections at hand some halidonata vary somewhat with regard to shape and the height of the umbones. The typical halidonata is relatively high and has high, prominent umbones, but there are variants in the direction of greater elongation and lower umbones. For example, one of such variation is the form described by D'Arbois as area trullata, which differs from A. halidonata in having a straighter base line and lower and flatter umbones as Dall has shown. (1)

(1). loc. cit.

In addition, the umbones of D'Arbois's area occidentalis are placed slightly further toward the middle of the shell and the upper portion of the posterior lateral margin is more oblique, in other words, the angle between the postero-dorsal and postero-lateral margins is more obtuse. Since these differences are scarcely of specific grade, and since, moreover, the end products are almost completely connected, it seems better to consider the more elongate form as merely a variety of halidonata. In the collections at hand there are only three large right valves that can with certainty be referred to the variety, although, as stated above, some of the halidonata forms vary in that direction. The shape of my shell-

er specimens of hispaniolia may be due to the uncertainties of collection, but it is possible that the young forms differ so little from halidonata that they cannot be separated.

The Santo Dominican forms that Cobb determined as A. consobrina Cowerby are typical, but to place A. floridana Conrad in synonymy was an error. It is probably safe to suspect that the citation of Cowerby for the occurrence of consobrina in "Haiti" refers to hispaniolis, but it is uncertain whether the Sumatra specimens are halidonata or its variety; Cobb's Costa Rican Pliocene consobrina (1) is scarcely the same as the Santo Dominican form, being higher and

(1). Jour. Acad. Nat. Sci., Philadelphia, 2nd Ser., vol. 4, p. 378, 1881.

more convex.

Toulou is mistaken in assigning consobrina to Moore, whose description of "Some Tertiary Bells in the Island of San Domingo" immediately precedes Cowerby's description of the shells. The single Satun specimen is so poorly preserved that it is difficult to determine what it actually is. Toulou comments on the marked dichotomy of the posterior ribs, a feature which is most characteristic of hispaniolia.

The Miocene (Duplin) and Pliocene (Vaccavay and Bloeschatchie)

A. lienosa Say (1) of the same size has a similar appearance, but is more evenly rounded anteriorly and has a slightly more arcuate base, more numerous and flatter ribs which have a more definite median sulcus and also a secondary sulcus on either side and are more obviously and finely nodulated. The recent West Indian A. testicostata Reeve (2) also is more completely rounded anteriorly

(1). Am. Conch., pl. 20, fig. 1, 1830.

(2). Conch. Icon., Arca, fig. 22, 1844. (= A. forficata Gould, 1850)

and has wider interspaces.

Occurrence.- Upper Miocene.- Santo Domingo (Gomberg, 1860; Cabb, 1872; Quoy, 1874, 1876) ?Curacao, Venezuela (Quoy, 1874) ?Cretan formation, Rhodes (Toulon, 1874). Localities: Bowden beds, Bowden, Jamaica.

ARCA (CLAPHARCA) CLAPHARCA n. sp.

Description.- Shell of medium size, heavy, decidedly inflated, moderately inequilateral; base gently and evenly rounded, sub-truncated posteriorly, rounded anteriorly; umbones moderately high, full, prominent, with an inconspicuous median elevation, situated at about the anterior third of the length; external surface sculptured with thirty-three high, flat-topped radial ribs of uniform width, separated by narrower deep 1-channelled interspaces; on the posterior slope the ribs lower and the interspaces wider than in the other portions of the shell; concentric sculpture of fine, usually evenly spaced raised lines, producing low nodules on the ribs, except on those on the posterior slope; apical area moderately wide with two distinct grooves behind the umbo; teeth numerous, vertical, except at the posterior end, the series continuous; inner margin with deep crenulations.

Dimensions.- Length, 23.5 mm.; alt., 17.5 mm.; semidiam., 9.6 mm.; length of hinge, 17 mm.

Remarks.- *A. clapharca* is represented by two detached left valves. It resembles most closely individuals of the same size belonging to the species *halidomata*, but differs by being proportionately more elongate, heavier, less compressed in the posterior dorsal region, more inflated and by having taller, more prominent beaks,

higher ribs and more deeply channelled laterals.

Occurrence.- *Lower Devonian*: Bowden beds, Bowden, Jamaica.

Area (Scapharca) inaequilateralis Guppy.

Area inaequilateralis Guppy, 1866, Zool. Jour. Zool. Soc. London, vol. 32, pp. 223-224, pl. 5, fig. 2.

Area inaequilateralis Guppy, 1874, Zool. Jour., Series 2, vol. 1, p. 117, (check list).

Scapharca (Scapharca) inaequilateralis Guppy, Bull. 1890, Trans. Wagner Free Inst. Sci., Philadelphia, vol. 5, pt. 1, p. 647.

Description.- "Shell transverse, slightly oblique, very inequilateral, produced posteriorly; valves with about 50 serrate radiating ribs, single on the disk, where they are not broader than one-third of their interstices; double anteriorly and posteriorly, where they are equal in width to the interstices; hinge-line long straight, forming an abrupt angle with the rounded anterior margin; posterior margin with an oblique slope." (Guppy, 1866)

Type locality.- Japan.

Shell small, thin, elongate, subovate, moderately inflated; umbones low, situated at about the anterior third of the length; the straight dorsal margin forming sharp angles with both lateral margins; angle between the dorsal and anterior lateral margin being slightly more than 90° , the one between the dorsal and posterior lateral margins about 135° ; extreme upper portions of ant-

erior and posterior lateral margins feebly incised on adult shells; anterior margin rounded; upper portion of posterior edge in obliquely truncate, lower portion produced; ventral margin sloping toward the posterior end; sculpture of the two valves similar, consisting of about thirty, clear-cut radiating ribs, the one adjacent to the antero-dorsal margin usually small and narrow; the next eight to twelve broad, being wider than the interspaces, and having a shallow, broad median sulcus; ribs in the central portion of the shell narrow, usually less than half as wide as the interspaces, and usually square; the posterior ribs, nine to eleven in number, much wider than the interspaces, flat and with a narrow groove (rarely two), almost or entirely obsolete on those ribs in the extreme antero-dorsal region; concentric sculpture of fine, closely set vertical lines, producing on the sulcated anterior ribs a double row of nodules and a single row on the undivided radial ribs, the nodulation of the median ribs usually more conspicuous on the left valve; posterior ribs not affected by the concentric sculpture; cardinal area very narrow, with one to three distinct grooves behind or under the umboes; teeth fine, closely set, short, vertical (except in the posterior region), uninterrupted, but the median teeth very short, inner margin of the valves deeply crenulate and from the crenulations faint lines, most noticeable in the posterior region, run up toward the umbo.

Dimensions.— length, 71 mm.; alt., 14.7 mm.; semilim., 7 mm.; length of hinge, 19 mm.; length, 18 mm.; alt., 15.6 mm.; semilim., 6.5 mm.; length of hinge, 11 mm.

Remarks.— Compared with the average *Scapharea* the shell of this species is decidedly thin and the sculpturing is elegant. Individuals belonging to this species are numerous and they may be immediately recognized by their small size, thin shells and internal radiating lines. The differences in the size and sculpturing of the radial ribs in different areas of the shell are enhanced by the delicate chisel-like which characterizes the sculpture throughout. The anterior ribs are nodulated and sulcated; the median ribs are lower and usually not prominently nodulated; the posterior ribs are broad, low and smooth, except for a shallow groove. A few forms show a very faint and shallow sulcus on the umbos. Young shells have the dorsal postero-lateral carina more deeply incised than in the case of the average adult. *A. inaequilateralis* is closely related, as Dall (1) has pointed out, to *A. laevigata*

(1). loc. cit.

Dall (2) of the Chipola marl and Tampa silex beds, but may be dis-

(2). loc. cit., p. 638, pl. 52, fig. 15, 1898.

tinguished by its more produced posterior margin, the varying character of the ribs in different portions of the shell, thinner shell, and finer, shorter and more numerous teeth. Another species from the same horizon, A. (Stephanos) inaequilateralis Hall (1) is readily distinguished when adult since the Floridian form is much larger, more

(1). Proc. A. S. Nat. Hist. Soc., vol. 27, pt. 1, 1890; Ill. Nat. Hist. Soc., no. 90, p. 111, pl. 17, fig. 7, pl. 22, figs. 17, 18, 1911

inflated, truncated posteriorly rather than acutely rounded and the ribs, except those on the posterior slope are deeply channeled; young individuals of the same size as inaequilateralis are similar in appearance, especially those from the silex beds, because of their thin shells, but they always have sulcate ribs and are not quite so much produced posteriorly. A. subaequalis Hall (2), described from Florida, seems to be larger, more

(2). Geol. Annot., vol. 1, pt. 1, p. 187, pl. 22, fig. 4, 1911.

convex, less produced posteriorly, the anterior ribs are more closely sulcate, the median ribs narrower and sharper and the ribs immediately anterior to the posterior slope are sulcate. Brown and Pilsbry have described another more closely related form from

A. *Aerionis*; (1) it is longer, 1911 produced posteriorly, the curve of the anterior margin is shallower, so that the ventral margin is

(1). Proc. Acad. Nat. Sci., Philadelphia, vol. 11, p. 344-362, pl. 22, fig. 10, 1911.

does not descend posteriorly; the type of sculpture is the same, but neither the nodules or the concentric lines in the interspaces are as prominent on right valves, on left valves the median ribs are wider and the posterior ribs occasionally have two rows of fine nodules.

Guppy's description, though brief, considered most of the diagnostic features. His figure, however, was drawn from an imperfect valve; the incision of the uppermost portion of the antero- and postero-lateral margins is deeper than normal and the shell should be more produced posteriorly.

Occurrence.- Lower Miocene: Bowden beds, Bowden, Jamaica.
(Guppy, 1908, 1874; Dall, 1909)

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ARCA (SCAPHARCA) DOLACIA Dall.

Scapharca (Scapharca) dolacia Dall, 1898, Trans. Amer. Mus. Nat. Hist.
Sci., Philadelphia, vol. 7, pt. 4, p. 449, pl. 75, fig. 17.

Description.-- "Shell small, globose, moderately clump,
with rather elevated processes low below at about the anterior third;
valves almost similarly sculptured; left valve with about twenty-
four low, strap-like, narrow radial ribs with lower at wider inter-
spaces; the ribs are plain, smooth, and entire on both valves; on
the left valve the interspaces are crossed by numerous equidistant
elevated lines which do not appear on the ribs; on the right valve
the interspaces are only marked by lines of growth; hinge-line short,
cardinal area very narrow, smooth; anterior end larger, rounded;
posterior end produced and attenuated; hinge teeth small, similar,
slightly divergent; internal margin of the valves with deep short
flutings. Len. 6.2, alt. 4.5, diam. 5 mm." (Dall, 1898)

Type locality.-- Bowden, Jamaica.

The umbones are relatively high and conspicuous. On the umbo
of the right valve a very shallow and narrow sulcus is usually
present. Toward the ventral margin this sulcus broadens, but al-
though slightly excavating the median ventral margin, it is never
prominent; on the left valve the sulcus is absent or very poorly

defined. The ribs - four to six in number - in the sulcus are narrower and flatter than the others; this is true also of the ribs that have a corresponding position on the left valve. On unworn valves fine, evenly and closely spaced concentric lines, usually more prominent in left valves, occur in the intercostal spaces; the median teeth are short and vertical, while the anterior and posterior ones are longer and slightly oblique. The deep, short crenulations of the internal margin are obsolete in the median ventral region, i. e., in the region of the external median sulcus.

Dimensions.- Right valve: Length, 9 mm.; alt. 4 mm.; semidiam., 2.5 mm.; length of hinge 5 mm. Left valve: Length, 9 mm.; alt., 5.2 mm.; semidiam., 2.6 mm.; length of hinge, 4.8 mm.

Remarks.- This is a small form, but there is no doubt that it actually is adult, since it is well represented by an amazing number of individuals of various stages of growth. Because of its shape and relatively high umbones it is sharply set off from the young of associated Scapharceas.

Occurrence.- Lower Miocene: Bowden beds, Bowden, Jamaica. (Dall, 1898).

AREA (PLATYSCA) VESICATA n. sp.

Area (Platysca) vesicata Lamarck ?, Dall, 1891 Trans. Amer. Geol. Soc. Phila., vol. 7, pt. 4, p. 143.

Description.- Shell of medium size, broadly inflated; posteriorly the angle broadly produced and the margin slightly excavated near the dorsal angle; anterior margin rounded by a broad curve into the gully and asymmetrically obsolete base; both extremities of the straight dorsal margin angular; umbonal region high, full, prominent, at about the anterior third of the length; posterior ridge strong, rounded, the posterior slope excavated; left valve slightly larger, with thirty-two, sharply beveled, square radial ribs separated by interspaces wider than the ribs in the anterior and median portions of the shell, but narrower in the posterior portion; in the anterior half of the shell the ribs dichotomous distally, on the posterior slope flatter and broader; all the ribs except those on the posterior slope modulated by numerous, sharp concentric raised lines that persist across the intercostal spaces; right valve with thirty lower and broader radial ribs, the interspaces being of about the same width in the anterior half of the shell and narrower in the posterior half; only the anterior six or seven ribs dichotomous, the nodulation limited to the anterior ribs, the nodules not as sharp as on the left valve; cardinal margin of velum

width, crossed by three to five concentric ligament grooves; teeth numerous, strong, vertical, the series being straight and continuous; inner margin of the valve with sharp granulations.

Dimensions.-- Right valve (type): length, 35 mm.; alt., 23 mm.; semidiam., 10 mm.; length of hinge, 28 mm. Left valve: length, 30 mm.; alt. 25 mm.; semidiam., 12.5 mm.; length of hinge 24 mm.

Remarks.-- *A. orephaine* is very close to the recent *A. auriculata* Lomax (1) and undoubtedly is in the same direct genetic

(1). Ann. Mag. Nat., vol. 8, p. 42, 1919; Reeve, Conch. Icon., Area, pl. 8, fig. 75, 1944.

series. The Bowden form is smaller, has more numerous, usually finer, lower and more conspicuously nodulated radial ribs and much narrower interspaces. It may be distinguished from the associated *Scapharcas* by its "auriculate" outline.

The single poorly preserved valve in the National Museum Collection, which was doubtfully referred to *auriculata* by OHL, appears to belong to this species.

Reference.-- Lower Miocene: Bowden beds, Bowden, Jamaica.

ARCA (ARCA) WORDENI N. SP.

Description.- Shell medium-sized, moderately inflated, heavy, elongate; dorsal margin low, straight, rounded at both extremities; unevenly rounded anteriorly, subtruncated posteriorly; ventral margin asymmetrically arcuate; umbones indistinct, low, with a very faint median sulcus; left valve sculptured with thirty-two clear-cut, coarse radial ribs of almost constant width throughout, except in the extreme anterior and posterior regions, flattened on the posterior slope; interspaces narrower than the ribs; except on the posterior slope the ribs and interspaces crossed by concentric raised lines, sharp in the interspaces and nodulating the ribs; right valve with thirty or thirty-one lower and usually narrower radial ribs, separated by interspaces of about the same width; concentric lines prominent in the interspaces, but nodulating only a few anterior ribs; ear and sord narrow, with one or two distinct grooves; both small and straight ventrally, lower at both ends and slightly oblique at the posterior end of the series; inner ear in with short, deep crenulations.

Dimensions.- Length, 25.5 mm.; width, 17 mm.; height, 8.5 mm.; length of hinge, 15 mm.

Remarks.- A. wordeni is characterized by its rather elongate

and inflated form, thick shell and relatively high, rounded and separated by deeply sinuated interstices. These nodules are proportionately less inflated than the ribs and the tubercles is often more prominent. A. inaequilateralis is of about the same size but is much thinner, more produced posteriorly, less inflated and has finer ribs; A. varians is higher, taller, has taller, more prominent beaks, wider ribs and narrower interspaces. The species A. varians Hall (1) has the same general form, but is

(1). Trans. Amer. Mus. Nat. Hist., Philadelphia, vol. 7, pt. 3, pp. 477-533, pl. 32, fig. 3, 1882.

larger and has lower, deeply sulcate ribs and a wider cardinal area.

This species is named for Mr. Charles Gordon, of the United Geological Survey, who gave efficient assistance in the preparation and preliminary determination of the material.

Occurrence. - Lower Cambrian: Gordonville, Gordon, Virginia.

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MUSA (MUSA) MUSA

Description.- Small shell, thin, moderately inflated, higher posteriorly, compressed in the posterior dorsal region; posterior margin truncated; ventral margin curving gently in the posterior half and more rapidly in the anterior half, anterior margin curving abruptly upward; both lateral margins joining the dorsal margin by sharp angles, the posterior angle being slightly more than 90°; umbones low, relatively broad, placed at about the anterior third of the length, with a very slight median sulcus; external surface sculptured with forty low, narrow, flat radial ribs, broader and flatter on the posterior slope, separated by narrower interspaces; in the interspaces faint concentric lines, consistent with the ribs, except those on the posterior slope, producing slight nodulations; cardinal area of medium width, with faint longitudinal striations; base low, slightly raised, with numerous small teeth; inner margin with numerous, short crenulations.

Dimensions.- Length, 21.8 mm.; alt., 12.8 mm.; semidiam., 5 mm.; length of hinge, 16 mm.

Remarks.- The compressed posterior dorsal region produces an auriculate effect which is more pronounced on young individuals. The ventral margin ascends rapidly toward the anterior end. These features, together with the numerous narrow, flattened radial ribs and small size of the shell, are distinguishing characteristics.

Some individuals, however, have been found, but no marked difference in altitude between the umbonal and ventral margin, i. e., the ventral margin ascends more rapidly anteriorly, and the umbonal elevation often persists to the ventral margin, thus producing an almost bilobed appearance. Considerable difficulty is experienced in distinguishing between the lower of wordeni and wordeni, those belonging to wordeni are usually more elongate, more auriculate and have more numerous and finer ribs. The adults are readily separable, since the shell of wordeni is heavier, larger, higher, more inflated and its ribs are coarser and higher. From the auriculate perphania, wordeni differs by being smaller, thinner, more elongate, less inflated and by having more numerous and finer ribs. A. wordeni Bell (1), of the Alipala fauna,

(1). Trans. Amer. Mus. Nat. Hist., Philadelph., vol. 7, pt. 1, p. 340, pl. 13, fig. 11, 1888.

is more produced anteriorly, has a straighter base, wider ribs and the anterior ribs are divided.

Abundance.-- Alipala fauna: Alipala beds, Alipala, Alipala.

NOVA (GASTROPODA) TROCHUS 13 n. sp.

Description.- Shell, small, well inflated, moderately inequilateral, slightly produced posteriorly; anterior end of the dorsal margin rounded; ventral margin almost symmetrically arcuate; rounded anteriorly and posteriorly; umbones moderately high, placed anterior to the median horizontal, the tip very slightly increased medially; external surface sculpture with thirty-six narrow, square-topped, closely set radial ribs separated by narrower interspaces; the anterior seven or eight ribs and the accompanying interspaces relatively wide; the next eight narrow and the succeeding ones progressively slightly broader, those on the posterior slope broadest and flattest; concentric sculpture of irregular, inconspicuous lines which faintly and unevenly modulate the anterior and median ribs; cardinal area moderately wide, with a single ligament groove behind the umbo; teeth numerous, vertical, except at the posterior end of the series; inner margin of the shell ornamented with numerous, deep, long crenulations; interior of the shell marked with fine, inconspicuous radiating lines.

Dimensions.- Length, 19.5 mm.; alt., 12 mm.; semidiam., 5.1 mm.; length of hinge, 14 mm.

Remarks.- This species is represented by a left valve. It may seem unfortunate to add another species to the already long list of Jordan's species, especially the species based on a single

volve which may be immature. The curved outline at the juncture of the anterior and dorsal margin, the almost apiculate base of the base, the numerous narrow radial ribs, the four, narrow crenulations of the inner margin are all distinctive. These features, together with the rather high, inflated form, distinguish A. thomasensis. It should be added that the posterior end of the dorsal margin of the specimen is broken off.

A. aristata has about the same number of ribs, but they are wider and the shell is more elongate and reticulate. A. cordani is almost the same shape, but its ribs are much coarser and the anterior end of the dorsal margin is sharply crenulate.

Occurrence.-- Lower Miocene: London beds, London, England.

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Section Arrina Greg.

AR34 (ARRINA) THERIA Bell var. MIDWAY M. var.

Succinea (Arrina) telepia Call, 1896, Trans. Amer. Mus. Nat. Hist.

Sci., Philadelphia, vol. 3, pt. 2, pp. 349-350, pl. 25,
figs. 7, 8. (ex parte).

Description.— Shell small, well inflated, the greatest inflation and greatest height of the shell behind the median horizontal, compressed in the distal postero-oral region; right valve smaller, more rounded, lower posteriorly than the left; antero-oral margin very short; rounded anteriorly; base slightly toward the posterior end; posterior lateral margin scarcely rounded below, but curves to meet the dorsal margin; umbones tumid, broad; medially sulcate, placed at about the anterior third of the length; left valve sculptured with thirty-six to thirty-eight strong radial ribs; anterior and median ribs subrounded, separated by narrower interspaces, and nodulated, the nodules being connected across the interspaces by raised lines; posterior ribs lower, flatter, separated by interspaces of almost the same width, and smooth or inconspicuously nodulated; right valve with about eight to thirty sharply sculptured, obscurely nodulate ribs separated by deeply channelled interspaces of the same width or slightly wider; cord-

lateral area as in the typical Arctinae; hinge with about fifteen posterior and nine anterior teeth, the two series interrupted; inner margin of the valve deeply crenulated.

Dimensions.-- Length, 6.1 mm.; max. alt. 5.3 mm.; width, 1.8 mm.; length of hinge, 4 mm.

Remarks.-- The description of the right valve may be incorrect since the only right valves at hand are very small forms which are doubtfully referred to this variety. It seems improbable that only left valves of one species and right valves of another should appear and therefore these right valves are considered microtera, although they display characters different from those that would be expected. Right valves of the section Arctinae are smaller than left ones and usually have fewer and lower ribs, but in this case the disparity in the number of ribs is inordinate and the ribs are more sharply sculptured on the right valves, even projecting beyond the margin in the anterior and median regions of the shell. In addition the right valves are more rounded and have umbones that are only obscurely sulcated.

This form has previously been referred to as A. tolepis, a name which Dall proposed for a species from Porto Dongo and Luana which Quoy (1) erroneously identified with the recent A.

(1). Geol. Mag., London, vol. 1, p. 115 (check list).

ovata Say (= A. caribbeanis Dillwyn). The Bowden form is, however, much smaller than the typical talasia, proportionately less inflated, slightly more rounded posteriorly and has rounded umbones, a few more ribs and narrower interspaces. In view of these differences it seems advisable at the present time to consider the Bowden form a disjunctive variety.

The species of A. caribbeanis Dillwyn (1) of the same size have

(1). Deser. Nat. Mus. Shells, vol. 1, p. 23, 1817.

a lower postero-dorsal margin which meets the lateral margin at a sharper angle, a straighter base, blunter and more conspicuous-ly nodulated sculpture and less distinct umbones. A. brightonensis Mearns (2) and A. billingsiana Mearns (3), both from an Upper Eocene horizon at Brighton, Trinidad, are more elongate, less in-

(2). Jour. Acad. Nat. Sci., Philadelphia, 2nd ser., vol. 15, pp. 43-47, pl. 6, figs. 1-6, 1912.

(3). Idem, p. 45-46, pl. 6, figs. 2, 3.

flated and differ also in sculpture.

Occurrence.-- Lower Eocene: Bowden beds, Bowden, Jamaica (Dall, 1908)/

Station Santa Rosa Ball.

ARCA (OCHSARCA) OBTUSATA n. sp.

Description.- Shell small, cardiform, height exceeding the length, decidedly inflated, higher posteriorly, moderately inequilateral; left valve larger, higher posteriorly, more inflated than the right and having higher umbones; dorsal margins short; rounded anteriorly and posteriorly, the curve of the anterior margin shorter and more convex than the posterior, passing without interruption into the slightly curved base; base descending toward the posterior end; umbones high, small, subcentral in position, cross-ovate; external surface sculptured with twenty-six to twenty-eight radial ribs, conspicuously nodulated throughout on the left valve, except on the umbo, but the right valve having only a few anterior ribs nodulated; cardinal area narrow behind the umbones, shorter and wider before; anterior series of teeth numbering about a dozen, vertical, forming an uninterrupted series, with the twelve to fourteen teeth of the posterior series; inner margin of the valve with short, deep crenulations.

Dimensions.- Length, 7.5 mm.; alt. 7.5 mm.; breadth, 3.5 mm.; length of hinge, 4.5 mm.

Remarks.- It is not representative to assume that the small valves that are the only representatives of this form are immature.

Such a conclusion is natural from a consideration of the character of the cardinal area which is very like that of the ventral surface of the ventral valve in a bivalve. The shape and outline, however, are not available, and it is probable that such shells would have a more equilateral cardinal area.

This is the only representative of the numerous species of bivalves that have a rather infrequent distribution in the Caribbean region. Its cardium-like form and extreme inflation are noteworthy.

Yerkes (1) has described A. elongata from the Miocene of California.

(1). U.S. Geol. Surv. Monograph, vol. 4, pt. 2, pp. 133-134, pl. 60, figs. 56-60, 62-65, 1910.

Yerkes, U.S. Geol. Surv. Monograph, vol. 4, pt. 2, pp. 133-134, pl. 60, figs. 56-60, 62-65, 1910. It resembles A. elongata but is more rounded, being more inflated posteriorly and with a more equilateral base. Apparently this species is actually variable, as the one represented by fig. 63 closely resembling opthanta in outline; the Calloskottidae A. elongata (2) differs in a similar manner.

(2). U.S. Geol. Surv. Monograph, vol. 4, pt. 2, pp. 133-134, pl. 60, figs. 56-60, 62-65, 1910.

larva. The young of the recent East Indian A. elongata

Billioi (3) of the same size are also elongated, but to a lesser

(1). Gelfand, *Ann. Math.*, vol. 2, p. 1, 1947, 1 = 1. Billioi
d'Almeida = 1. Billioi (1947).

plated, with lower and lower umbones.

Occurrence. - Lower Miocene: *Billioi*, *Billioi*, *Billioi*.

Section with Area Shell.

AREA (ALYDIA) VANDERHOEII Dall.

Tracharea (Batharea) Vanderhoei Dall, 1887, Trans. Amer. Free
Inst. Sci., Philadelphia, vol. 3, pt. 1, p. 67, pl.
57, fig. 7.

Description.- "Shell very small, much inflated, the hinge-lig-
ament low on the shell, which is of a rounded triangular form, with
rather prominent oroscolous beaks; left valve with fine, elevated
rounded concentric lines, crossed by closer, less prominent, and
finer radial lines; in the right valve, as shown in this section
of the genus, the radial sculpture predominates over the concentric,
the latter being almost being incised; vertical area well-
markedly wide, the beaks being nearly medial, the surface of the
area longitudinally striated; hinge with about five nearly verti-
cal anterior teeth separated by a wide unarmed gap from six or seven
smaller, more oblique posterior teeth; margin of the valves thin,
entire, or microscopically crenulated; the inner edges of the ad-
ductor scars slightly raised above the inner surface of the valve.
Len. 2, alt. 2, diam. 2 mm."

"This minute little species is obviously adult, and about ten

valves were obtained. A. glomerata Dall (1)

(1). Notizis, etc., p. 25, Pl. 1, Fig. 12, 1880. The west Indian form has been separated as the variety orbiculata Dall. (Bull. Mus. Scient. Zool., vol. 9, p. 182, 1901; Mem., vol. 17, pp. 242-243, Pl. 1, Fig. 5, 1902.

and A. glomerata Dall^s of the recent form, but is smaller, more

(2). loc. cit., pp. 181-182, 1901; loc. cit., p. 182, Pl. 1, Fig. 2, 1902.

inflated, and more tubercular than either of them." (Dall, 1906)

Type locality.-- Sweden, Jämtland.

Remarks.-- In the Duerden collection there are only a few valves of this small, interesting species, but, strange enough, a surprisingly large number is present in the Alcock Collection. The shell is much higher posteriorly so that the anterior margin descends steeply, while the posterior margin is only gently curved. The greatest inflation is in the median posterior region. For the size of the shell the umbones are very broad; they are placed slightly anterior to the median horizontal. Occasionally there is visible a very faint sulcus on the umbo, which when continued is on the anterior side of the median line of the shell and in rare cases it slightly insinuates the margin. As usual in the section, the

left valve is larger. Left valves in particular display a certain range of variation in convexity, the least convex form having a narrower apical area and more oblique anterior teeth.

Among the specimens was a left valve which was quite distinct from the remainder in being more convex, in having a shorter posterior dorsal margin and therefore a more convex posterior lateral margin, much higher and more incurved apico and a wider apical area. Unfortunately the shell was not complete and in handling was irreparably broken. It is mentioned in the hope that future exploration will reveal its presence.

The most closely related forms are, as noted above, recent species.

Occurrence.—Lower Miocene: Lower beds, Berlin, Germany.
(Dall, 1898).

Section *Andara* Gray.
ARCA (ADRIAL) DASIA ...

Description.— Shell of medium size, heavy, subrhomboidal, elongate, weak inflated, slightly higher in the posterior region, the anterior margin curving broadly into the gently arched ventral ear in; obliquely truncated posteriorly; umbones high, decidedly inflated, the tip slightly inclined medially, situated at about the anterior third of the length; left valve sculptured with twenty-six high, square radial ribs, separated by wider deeply channelled interspaces; on the posterior slope the ribs lower and flatter, the anterior ribs about as wide as the interspaces; concentric sculpture of incrementals, elevated at intervals, producing faint nodulations on the tops of the ribs and inconspicuous raised lines on the sides of the ribs and in the interspaces; cardinal area impressed, of moderate width, wider in front of the umbo, with five ligament grooves behind the umbo and five longitudinal striations before; hinge long, straight, with fine numerous teeth, lower and slightly oblique distally; inner margin of the valve with short, broad, deep crenulations.

Dimensions.— Length, 71.5 mm.; alt., 18 mm.; width, 15 mm.; length of hinge, 25 mm.

Remarks.- This variety, the only representative of the section Amalura, is found on a single left valve. The elongate form, thin, heavy shell, high dorsal and deeply sculptured radial ribs distinguish it from the other Areas of the Bowden fauna. A. labella is smaller than A. pampis Bell (1) of the Montserratian Miocene, more elongate, more produced posteriorly, with a more

(1). Trans. Warner Free Inst. Sci., Philadelphia, vol. 7, pt. 4, pp. 666-667, pl. 52, fig. 21, 1896.

typical Amalura hinge. The Palaeontological A. costata Bell (2) is larger, more produced posteriorly, with umbones that are more

(2). Idem, op. 674-675, pl. 53, fig. 20, 1896.

anterior in position and sharply sulcated anterior ribs.

Occurrence.- Lower Miocene: Bowden beds, Bowden, Jamaica.

Subfamily: Elzevirinae.
Genus: *Elzeviria* Costa.

Elzeviria *Elzeviria* Bell.

Pectunculus *pectunculus* Say, 1830, Trans. Amer. Acad. Sci. Philad.,
vol. 22, p. 303 (non *Pectunculus*, 1801.).

Arima *pectunculus* Leub, 1877, Trans. Am. Phil. Soc., New York, vol.
15, p. 363 (non *Pectunculus*, 1801) ex parte.

Pectunculus *pectunculus* Say, 1830, Trans. Amer. Acad. Sci. Philad., vol. 22,
p. 303 (check list), ex parte. (non *Pectunculus*, 1801.).

Pectunculus *pectunculus* Say, 1830, Trans. Amer. Acad. Sci. Philad.,
vol. 22, p. 303, (ex parte, non *Pectunculus*, 1801.).

Elzeviria *Elzeviria* Bell, 1836, Trans. Amer. Acad. Sci. Philad.,
Philadelphia, vol. 2, pt. 1, p. 303.

Description.— ".....Moderate size, nearly circular, surface
convex, externally sculptured with fine, even, radiating striae,
impressed at intervals so as to give the effect of obsolete ribs,
which are more apparent on the middle of the shell; on the beaks
some of the threads are stronger; umbonal low and broad; umbonal
area imbricated, narrow, short, and smooth; teeth small, white, pointed,
about twenty-four in all, the line gently arcuate; inner margin
fluted, with a slight insinuation near the base in front.

Long. 75, alt. 45, diam. 12 mm." (Lall, 1900).

Type locality.-- Jordan, Jamaica.

Shell decidedly convex; umbones low, decidedly isolated; shell with the distal two-thirds of the posterior slope gently beveled, the point of impingement of the bevel on the posterior lateral ear in being the dorsal termination of a transverse extending obliquely downward to the postero-ventral margin, then following the curve above of the anterior half of the ventral margin; anteriorly the straight dorsal margin passing rapidly into the broad curve of the antero-lateral margin; the slope between the postero-dorsal and postero-lateral margins less abrupt; external sculpture of many very low, inconspicuous radiating ribs, narrowing into more prominent elevated lines on the umbones and absent in the extreme antero- and postero-lateral regions; fine, coarsely granular striations and especially fine, but less prominent, concentric striae concentrated on the ribs and narrower interspaces, the last being most numerous, and rounded sculpture visible only on the ventral valve; cardinal angle very narrow; hinge-plate gently and uniformly arched; teeth relatively small, usually 15 before and 15 behind the axis; notches of the muscle-scars not prominent.

Dimensions.-- Length, 75 mm.; alt., 45 mm.; diameter, 12 mm.

Remarks.-- This species is most abundant of the members of the genus. Individuals that have assumed adult features are character-

ized by the unique posterior keel, which, though slight, is noteworthy, and the concomitant oblique truncation of the postero-lateral margin. Immature forms do not display these features, but they may readily be distinguished from the young of the other species by their external sculpture. Compared with adults, the primary radials of young shells are prominent and the secondaries depressed.

Drury referred this form to I. pennsylvanica (Linnaeus) or G. de-
cussata (Linnaeus), but it obviously differs from the recent,
which has been given either of these names, being more convex, with
a more irregular contour and rather concentric sculpture. Most
of Webb's Santo Domingoan pennsylvanica are neither that species or
jamaicensis; they differ from the latter by being less inflated,
more elongated transversely, without the posterior keel and trun-
cation, the posterior margin being rounder more convex than the
anterior, with the primary radials slightly more prominent. In
addition to this form, typical specimens of jamaicensis are present.
G. barboensis Brown and Hilgert (1) of the latter group, is smaller,

(1). Proc. Acad. Nat. Sci., Philadelphia, vol. 62, pp. 505-506,
pl. 22, fig. 2, 1911.

without the posterior keel and truncation, with lower, broader um-
bones, more prominent primary radials, more concentric sculpture

sculpture, fewer and sharper teeth, deeper and sharper horizontal marginal crenulations.

Occurrence:- Lower Miocene.- Santo Domingo (Gabb, 1971; Gabb, 1974, 1976). ?Cumaná, Venezuela (Gabb, 1971). Lower Eocene: Barton beds, London, England (Gabb, 1971; Gabb, 1976).

HYALINUS ACUTICOSTATUS (SOWERBY)

Pectunculus acuticostatus Sowerby, 1853, Quart. Jour. Geol. Soc.

London, vol. 8, p. 37, pl. 13, fig. 15.

Pectunculus acuticostatus Sowerby, 1853, Quart. Jour. Geol.

Soc. London, vol. 22, p. 207, 1861.

Hyinea acuticostata (Sowerby) Lamb, 1897, Trans. Am. Philol. Soc.,

new ser., vol. 15, p. 255.

Pectunculus acuticostatus Sowerby, 1853, Quart. Jour. Geol. Soc.

London, vol. 8, p. 37 (check list).

Pectunculus acuticostatus Sowerby, 1853, Quart. Jour. Geol.

Soc. London, vol. 22, p. 207.

Hyocypris acuticostata (Sowerby) Brown and Filsby, 1911, Proc.

Acad. Nat. Sci., Philadelphia, vol. 63, p. 741.

Description.-- "Testa suborbicularis, subobliqua, postice subangulata, rarissime multilocata, costis tenuibus, sublaevibus, striatis, area cardinali bifariam tenuiter sulcata, sulcibus sublaevibus et utrinque latus numerosis, confertis." (Sowerby, 1853).

Type locality.-- Santo Spirito.

Shell of medium size, the height about equaling the breadth, moderately convex, outline arc s-triangular; dorsal margin scarcely differentiated; posteriorly produced, subangular; broadly rounded

anteriorly; and ventrally; umbones very low; external sculpture consisting of about twenty-six low, collated ribs, slightly irregular on narrow shells except in the extreme antero- and postero-lateral regions, the flanks of the ribs sloping gently from the angular summit, forming angular interspaces; concentric or lateral of fine, equally spaced striae, usually not overriding the summits of the radials, but conspicuous on their flanks; cardinal area narrow, very short, not affecting the angular outline of the dorsal margin, conspicuously marked by ligament grooves diverging from a median vertical line; hinge plate beaded, serrate; teeth small, numerous, the series interrupted by the subsidence of the cardinal area, with twelve or thirteen teeth on either side; inner margin of the valve coarsely and weakly crenulated.

Dimensions.— Length, 24 mm.; alt. 23.8 mm.; semidiam., 6.5 mm.

Remarks.— The beautifully sculptured shells of this widely distributed species are almost as numerous as formosensis. The low, shagreened angular ribs and subangular posterior elevation are the salient characters. Among literature forms the irregular outline of the posterior margin is poorly defined or entirely lost. Young shells apparently belonging to this species, present puzzling features. Some have the typical, somewhat compressed form and characteristic angular sculpture; others are more inflated, with higher umbones, angular or subangular ribs, separated by definite interspaces; another group, including most of the smallest shells,

are inflated, with more or less rounded ribs separated by narrower interspaces. Members of the last group somewhat resemble G. ventralis (Gmelin) (1), but differ by their inflated ribs, however

(1). Syst. Nat., p. 1517, 1793.

ribs and interspaces.

G. campalis (Gmelin and Hilborn) (2), 1892: 1603 from Panama,

(2). Proc. Acad. Nat. Sci., Philadelphia, vol. 63, p. 364, pl. 28, fig. 10, 1911.

Panama, is more inflated, with rounded ribs, which are, however, be subangular.

Occurrence.- Upper Eocene.- Santo Domingo (Gabb, 1873; Gabb, 1873; Guppy, 1874, 1876). Cumana, Venezuela (Guppy, 1874). Baton formation, Panama (Guppy and Hilborn, 1911). London Wells, London, Jamaica. (Guppy, 1874; 1875; 1876, 1877).

PECTUNCULUS VERMICULARIS (Lamarck)

Pectunculus vermicularis Lamarck, 1819, Ant. Syst. Nat., vol. 6,
p. 51; 1825, idem, Tab. 1., p. 123.

Pectunculus carolinianus Bourc., 1874, Proc. Acad. Nat. Sci. Philad.
State, no. 1, inside of back cover.

Pectunculus carolinianus Bourc., 1874, Proc. Acad. Nat. Sci. Philad., no. 1, p. 25.

Pectunculus carolinianus Bourc., 1874, Ant. Syst. Nat., 1874, vol. 41, p. 344.

Pectunculus vermicularis Lamarck, 1825, Tab. 1., vol. 1,
Pectunculus, pl. 3, fig. 21.

Not P. carolinianus Bourc., 1874, Proc. Acad. Nat. Sci. Philad.,
p. 15, pl. 3, fig. 4.

Atrina carolinianus Bourc., 1874, Proc. Acad. Nat. Sci. Philad.,
vol. 1, p. 25.

Atrina carolinianus Bourc., 1874, Proc. Acad. Nat. Sci. Philad.,
vol. 1, no. 1, p. 25.

Pectunculus lineatus Silliman, 1837, Trans. Amer. Acad. Nat. Sci.,
vol. 1, p. 123. (Also Reeve, 1843, Reeve, 1843).

Atrina vermicularis (Lamarck) Call and Stenroos, 1872, Call and Stenroos,
Fish Comm., vol. 1, no. 1, p. 123.

Not P. vermicularis Bourc., 1874, 1875 (see above) = P. carolinianus
Call.

thick, coarse teeth, the first three (from the umbo) small, the remainder straight and almost triangular; middle ones relatively large, weakly bottlenecked; lower portion of the valve with fine crenulations.

Dimensions.— Length, 32 mm.; alt., 22.5 mm.; thickness, 8 mm.

This interesting *Thracia* is represented by three small valves. The smallest form has radial striae which differ somewhat from that of the largest, the ribs being very sharply defined and subangular, becoming slightly broader distally, with small secondaries in the distal portion of some of the interspaces. On the shell of intermediate size the primary ribs are relatively broad and angular distally, with secondaries of almost the same order of magnitude. Finally, on the largest individual, the ribs are flat, broad and grooved. From the above it is quite obvious that some shells display to better advantage the characteristic reticulation.

The deeply immersed, almost internal ligament, pronounced backward twisting of the umbo, the strikingly different anterior and posterior teeth are unusual for the genus. The largest Bowden valve shows a remarkably close resemblance to a large Indian valve in the National Museum collection. It should be remembered that Lamarck (1835) stated that this species is "re-
markable for its small size, and its white striae

test-d-falt d l'extremité antérieure (postérieur) du ligament, le suture car le ligament est entièrement sur le l'intervallo qui les sépare." A parently it is not understood that these actually belong to the group which is divided into two species, some of which do not have the above given and different characters; and besides have a more regular posterior margin, but the same sculpture. Conrad reported one of these from the Duplin of North Carolina, although it has not appeared in subsequent collections. Because of this uncertainty it is doubtful whether all of the above citations belong in the synonymy.

G. lamellosa is more inflated, more regularly rounded and keeled posteriorly, with less prominent concentric sculpture, a different cardinal area and hinge.

Occurrence.- Lower Miocene: Bowden beds, Bowden, Jamaica. Miocene.- Duplin Formation, North Carolina (Conrad, 1877, etc.). Eocene.- Dominica, West Indies (Hall, 1891); Calceogastria, West, Florida (Hall, 1891). Recent.- North Carolina to the West Indies and east to Bermuda.

Order: Stolidi.

Family Pinnidae.

Genus: Pinn (Pinn) Pinn.

Pinn (Pinn) Pinn.

Description.-- Shell small, globose, subglobose, with a slightly rounded apex; summit of the shell slightly elevated nearer the dorsal margin; dorsal surface almost flat, the ventral gently arcuate; apex rounded; dorsal and ventral margins straight, diverging at an angle of about 25° ; external surface with a well-defined, relatively deep sulcus, extending from the anterior end and extending posteriorly along the summit of the shell; dorsal region of the shell sculptured with five well-defined longitudinal ridges, excluding the ridge adjacent to the sulcus; upper half or more of the ventral portion sculptured with three more irregular, broader, lower ridges, followed (toward the ventral margin) by a low, broad, shallow ridge, slightly from the margin and terminating abruptly at the longitudinal ridges; inner surface with a low, narrow ridge corresponding to the external sulcus.

Dimensions.-- Length, about 65 mm.; max. alt., 17.5 mm.; max. semidiam., 7.8 mm.

Pinna.-- This species is described from the 2 specimens, the smaller of which is a young specimen and the larger, a recent form, with the integumentary surface broken. On the larger fragment most of the posterior muscle scar is visible, showing that it is large, longitudinally elongate, convexly rounded posteriorly, ventral in position. The principal features are the strong, asymmetrical convexity, prominent external sulcus and the character of the sculpture.

The Deltoideus-like P. deltoideus Dill (1) is similar, but

(1). Trans. Wagner Free Inst. Sci., Philadelphia, vol. 3, pt. 4, p. 300, pl. 20, fig. 4, 1880.

asymmetrical, with a broader, higher internal ridge and different sculpture. P. radis (Linnaeus) Dillwyn (2), a recent West Indian

(2). Linnaeus, Spex. Nat., ed. 12, no. 1130, 1760, on carte; Dillwyn, Cat. Rec. Shells, p. 322, 1817; Reeve, Conch. Icon., Pinna, pl. 10, fig. 19, 1858.

species, is thinner, with a less conspicuous external sulcus and internal ridge and differs also in sculpture; the other recent West Indian form, P. carnea Gmelin (3), differs in a simi-

(3). Syst. Nat., p. 3365, 1792; Reeve, Conch. Icon., Pinna, pl. 20, fig. 18, 1858 (as P. flabellum).

lar runner. All of the other species much a larger size than the
headed form.

Comments. - The species is: *London, New, London, London.*

Genus *Stylis* sp.

Stylis sp. n.

The genus *Stylis* is represented by a single fragment, right valve. The ventral margin, dorsal and extreme posterior portions are missing, so that the outline is uncertain, although it appears to be elongated and similar with the dorsal margin straight and slightly reflexed. Most of the surface is covered with relatively coarse oblique striations, some of which are superimposed finer oblique markings; but along the ventral edge, which may be some distance from the dorsal margin, there are indications of an extremely longitudinal striae. From the character of the sculpture and the feeble convexity, this fragment is believed to represent a *Stylis* fossil.

Remarks. - Lower Silurian; probably early, but not certain.

April 11, 1917.

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Occurrence.- In the Rio Grande: 3 miles S. of Lordsburg, 1911.

Family Tridacnidae.

Genus *Tridacna*.

Tridacna *tridacna* n. sp.

Description.— Shell small, subtriangular, with the umbo at the anterior end, the dorsal margin slightly convex, the ventral margin slightly concave, the lateral margin, descending more gently posteriorly and ventrally; dorsal area moderately low, slightly convex, the ventral area more depressed; the dorsal area, including the umbo, is depressed, set off from the rest of the shell by a ledge along the line of the dorsal margin; the ventral area is slightly convex; the cardinal area very narrow, low, extending almost to the extremities of the shell; the lateral area is slightly convex, placed slightly before the umbo and a lateral lamella near the posterior end of the dorsal margin.

Measurements.— Length, 1.5 mm.; width, 1.2 mm.; height, 3.2 mm.

Remarks.— The *Tridacna* is similar to the *Tridacna* of the same family. The *Tridacna* is similar to the *Tridacna* of the same family. It is judged that the shell is not much produced along either the post-

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altogether different in lithological character from the remaining Santo Domingo material, with little of the shell remaining; it is more convex, more produced posteriorly, with the anterior auricle narrower and more acuminate. The Chipola material which has been
mentary; apparently the form is less produced posteriorly and more

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(1911, 1912).

Superfamily Ostreacea.

Family Ostreidae.

Genus Ostrea (Linnaeus) Lamarck.

Ostrea maritima Linn.

Ostrea maritima Vanley, 1845, Proc. Zool. Soc. London for 1845,
p. 106.

Ostrea gallus Valenciennes, 1845, Voy. Zool. Zool., pl. 11.

Ostrea peruviana Gabb, 1869, U. S. California, vol. 1, no. 31,
106, pl. 11, fig. 61.

Ostrea gallus Valenciennes, Gabb, 1869, Jour. Conch., vol. 5,
p. 32.

Ostrea maritima, Vanley, Reeve, 1871, Zool., Icon., Ostrea, 1.
11, fig. 81a-b.

Ostrea gallus Valenciennes, Millerin, in Gite, 1881, Zool.
Ann. West. U. S. Cal. Survey, p. 111.

Ostrea maritima Vanley, Dall, 1881, Trans. Acad. Nat. Sci.,
Philadelphia, vol. 3, pt. 4, pp. 685-686.

Description.-- "Ost. testa falcata, glabra, solida, subaequi-
valvi, pallide livido-purpurascens, marginis versus plicata; pli-
ca antica 5-6, minima, subaequalis; postica 1-2, sub-

elastic, porous, subobovate; narrow valve elastic, interposed
by a minute suture; anterior thin, slightly; superficial lateral elab-
orations to, numerous, irregular; elastic, with a small, rounded.
Long. 5 poll."

"A rare and extraordinary species, which bears not the slight-
est resemblance to any of the recent *Ostraea*. The narrow sickle-
shaped suture and slightly serrated tooth-like fold form its most
distinctive character. The adult specimens are attached by their
apices only." (Hanley, 1845).

Shell small, thin, subovate; both valves compressed or
slightly convex; outline variable, elongate and laterally sub-
ovate to subfalcate; left valve bearing three to five broad, ir-
regular, subangular to rounded plications, most prominent at the
ventral margin and extend only a short distance from the margin;
depressions between the plications broader, thinner and less ang-
ular than the plications; right valve with similar, but less promi-
nent, plications or more frequently irregularly wavy; both valves
without definite concentric sculpture except incipient lines, usually
non-laminated incremental lines; ligament broad and, oblique in pos-
ition, with, on the left valve, a broad, shallow median depression;
submargins finely, but conspicuously corrugated; muscle scar rela-
tively large, posterior in position, longitudinally subelliptical
to broadly subovate in outline, with the anterior dorsal margin
deeply emarginated.

Dimensions.- A longest Minelli; subovate right valve: lat. 21.5 mm.; ht., 10.5 mm. A subfalcate sigmoid valve: dorsal lat., 17 mm.; ventral lat. 27.6 mm.; alt., 21.5 mm.

Remarks.- The proverbial difficulties involved in the identification of the members of this genus are exemplified in the case of the Fowden oysters by the almost complete absence of large individuals. The specimens referred to O. margin are by far the most numerous. Typically this species is subfalcate, but most of the individuals are only slightly curved, while many of them have an outline which varies from longitudinally elongate to longitudinally subovate with theumbo placed at or near the posterior end. The most characteristic features are the small number of broad, subrounded, short plications on the left valve, the nodular sculpture or irregular warring of the right valve, and the absence of laminar concentric sculpture. The somewhat falcate O. ampliplicata Will (1), described from the Cal. zone, had a larger

(1). Trans. Wagner Free Inst. Sci., Philadelphia, vol. 7, pt. 4, p. 379, 1880. (As O. bellaciformis Conrad var. marginelliformis.)

number of radials (seven to fifteen) and regular concentric laminae. Non-falcate forms of margin somewhat resemble the marginelliformis

O. triangularis (1) of the same size, but triangularis is smaller, with more definite concentric laminae and a wider ligament

(1). Journal, T. I., Proc. Acad. Nat. Sci., Phila. (1855), vol. 7, p. 259, 1855.

area.

Reeve (2) connected the identity of his O. peruviana, from

(2). loc. cit., p. 106.

the Albatross (3) of Peru, I have, off Lower California, and was undescribed, but figured, recent O. gallus Valenciennes, but stated that peruviana is not more than half as large as the gallus form.

He also noted the occurrence of an oyster in the late Tertiary of Payta, Peru, which he considered identical with gallus; in fact, later in the same year in the Journal of Conchology he called the Peruvian form gallus. Reeve apparently was the first to recognize the identity of gallus with the previously described megodon. If the above synonymy is accepted, this species is, as Dall has stated, one of those forms which formerly was common to the Antillean and Pacific regions, but after the separation of the two provinces persisted only on the Pacific side. Examples of such distribution are frequently encountered, not only among

Ostrea Haitiensis Sowerby.

Ostrea Haitiensis Sowerby, 1850, Quart. Jour. Geol. Soc. London, vol. 6, p. 53.

Ostrea Heermanni Conrad, 1856, Proc. Acad. Nat. Sci., vol. 7, p. 327.

Ostrea vespertina Conrad, 1856, Pacific R. R. Rept., vol. 5, p. 325, pl. 5, figs. 36-38.

Ostrea Heermanni Conrad, 1856, idem, p. 326.

Ostrea virginica Guppy, 1866, Quart. Jour. Geol. Soc. London, vol. 22, p. 577 (non Gmelin, 1792) in text.

Ostrea virginica Guppy, 1866, Quart. Jour. Geol. Soc. London, vol. 22, p. 577 (non Gmelin, 1792) in text.

Ostrea Veatchii Gabb, 1869, Pal. California, vol. 2, pp. 34-35, 60-61, 106, pls. 11, fig. 59; 17, figs. 21, 21a.

Ostrea vespertina Conrad, Gabb, 1869, idem, p. 107.

Ostrea virginica Guppy, 1874, Geol. Mag. decade 2, vol. 1, p. 443, new ser., vol. 15, pp. 257-258.

Ostrea virginica Guppy, 1874, Geol. Mag. decade 2, vol. 1, p. 443, (check list), ex parte, non Gmelin, 1792.

Ostrea Haitiensis Sowerby, Guppy, 1876, Quart. Jour. Geol. Soc. London, vol. 32, p. 532.

Centra reparans Shaw, Callis in White, 1901, Trans. Am.

Soc. 71, p. 197, fig. 1.

Centra reparans Shaw, Callis in White, 1901, Trans., 71,

pl. 71, figs. 1-4.

Centra reparans Shaw, Callis in White, 1901, Trans., 71, pl.

72, fig. 1.

Centra reparans Shaw, 1901, Trans. 71, fig. 1.

Sci., Philadelphia, vol. 7, p. 197.

Centra off. reparans Shaw, 1901, Trans. 71, fig. 1.

Wickham, vol. 38, pp. 710-711, pl. 1, fig. 1;

pl. 1, figs. 1a-b.

Centra off. reparans Shaw, 1901, Trans., vol. 71, fig. 1.

197-198, pl. 1, figs. 1a-b.

Centra reparans Shaw and White, 1901, Trans., vol. 71, fig. 1.

Philadelphia, vol. 7, p. 197, pl. 1, fig. 1.

Description.- "Facts oblong, apert, elliptic, slightly convex (senis ad septenis), magnis, undulatis, subscamosis, squamis non-numerosis subtrabeculis; limbo interno outline glabra." (Shaw, 1901)

Type locality.- Santo Domingo.

The Dominican specimens are small (not exceeding 75 mm. across), thin or slightly thickened, compressed to slightly convex; outline

varying from longitudinally ovate to broadly ovate or even sub-circular; left valve with five to seven strong, narrow, usually sharply angular plications, some arising near the umbo and becoming progressively prominent toward the margin; secondary plications or ridges usually intercalated between the primaries at the margin and extending a short distance from the margin; interspaces between the plications deep and sharply angular; concentric sculpture of laminae, superimposed on the plications and most prominent near the ventral margin; right valve almost smooth or bearing plications similar to those on the left; submargins usually corrugated; muscle scar large for the size of the shell, subelliptical to sub-circular in outline, posterior in position; inner margin of the valve at times bearing minute pustules.

Distributions.— Lat. 24° N.; alt. 75 m.

Remarks.— *O. heitensis* is represented by only a few small valves. This meager representation is probably not a certain indication of its role in the composition of the fauna, but, since no large oysters of any species are present, it may be explained by the fortuitous circumstances of collection. It must be remembered, however, that conditions may have been unfavorable for the prolific growth of oysters, since in none of the collections to which the writer has had access, are the members of this genus prominent, either in size or in number. The small oyster specimens

specimens are of enormous size. In the United States the
Coast of Florida P. latirostris is the most common, and
the largest and is also present in the Gulf of Mexico. (1)
Here it attains a large size, reaching 12 or 15 cm. diameter.

(1). Gardner, J. L., Mes.

compared with specimens from either Santo Domingo or Florida the
Borden forms are very small indeed. In the case of the Florida
Florida forms the outline is more subcircular, the plications more
persistent toward the umbo and the concentric lamellae often sub-
spinose on the crests of the plications.

This species is characterized by its subcircular or broadly
ovate outline and strong, relatively regular, sharply angular pli-
cations. These features readily distinguish it from the most
of P. marginatus, which is more elongate, typically subcircular, with
broader, fewer, weaker and less angular plications and without pro-
minent concentric lamellae. The Discus Antiquus P. latirostris
Borden (2) is heavier than the typical latirostris; its plications,

(2). Proc. Acad. Nat. Sci., Philadelphia, vol. 45, pt. 1, 1907, 111,
pl. 11, fig. 12; 49, pl. 1, 5, 6, 1910.

when present, although of almost the same number, are divided into

two systems, one of five and the other of two, upon anterior dorsal depression and, since the shell is heavy, the lamellae directly affect the valves; besides, the margin of the left valve is strongly notched and the right valve covers each side; reflected. The small, thin, elegantly sculptured Bowden forms are scarcely comparable with this massive species, but the typical large haitensis approaches it more closely. Brown states that "at Willoughby Bay [Antigua] a much larger species of oyster was observed, which he called O. haitensis (Bowden)." (1) O. murifera Dall (2) from the

(1). Ibid., p. 102.

(2). loc. cit., p. 107, 1883, (as O. bellaeformis Dall, var. murifera).

Tampa silex and Chipola horizons never attains the size of haitensis and may be distinguished from the young of haitensis by the coarser ribbing in the right valve and the more exfoliated lamellae in the left. The Oak Grove O. pauciplicata Dall (3) has a

(3). Ibid., (as O. bellaeformis Dall), var. pauciplicata.

more falcate outline and more regular concentric lamellae. When Webb described the California oysters he associated as he

later stated, with Conarby's latest description (11), 1977, as

(11). loc. cit., p. 250, 1977.

prepared the Santo Domingo memoir he recognized the identity of his O. vespertina (type locality, Lower California and occurring also at San Diego on the east side of the Peninsula of Lower California) and O. halimeda. The California form, apparently is comparable in size and in other features to the large Floridian and Santo Domingo specimens. Bell was added to the synonymy of the offshore O. hesperus Conrad and O. vespertina Conrad, both originally described from "Carmichael Creek", California. According to the excellent figures in the Mexican Boundary Report, the plications of vespertina are not as high or as numerous as the Californian halimeda and the outline is not so rounded, but these features are probably due to immaturity. It appears that the Californian plications are still smaller vespertina, vespertina and hesperus distinct species.

Conrad (1860) stated that he considered O. halimeda distinct from O. virginica Gmelin, but later (1876) he recognized the fact that they are sharply differentiated. Toulou's "Ostrea aff. vespertina Conrad." 1909, Gatun, Panama, appears to be the young of halimeda; the 1911 citation (Gatun, Panama, 1911) refers to the small, rather slender, 1911 form, with strong plications.

Description.-- Shell suboval, convex, with rounded anterior and posterior margins; anterior margin of the lower valve usually notched into a shallow notch, and the sides usually ribbed; ribs, rounded, smooth. (Smith, 1911).

The lower valve is separated by the anterior suture from the upper valve; outline variable, longitudinally elongate, and narrow; left valve usually more convex than the right; longitudinal muscle scars present; surface of the valves usually smooth to finely granular, usually subreticulate; the central portion of the shell almost smooth or bearing curved clasping spines; concentric sculpture of inconspicuous incremental lines; ligament area small, flattened; muscle scars small, subelliptical to subcircular in outline, usually posterior in position; inner margin of the shell, or only portions of the margin, often bearing small pustules.

Remarks.--

Remarks.-- These forms are the most puzzling of this unsatisfactory assemblage of oysters. They cannot be separated from the recent West Indian group which has been reported under various names,-- O. solida (Lamarck), O. subovalis (Lamarck), O. subovalis (Lamarck), and the commonest of the group is O. subovalis (Lamarck).

Superfamily: Pectinoidae.

Family: Pectinidae.

Genus: Pecten Miller.

Subgenus: Pecten.

Section: Pecten.

Pecten (Pecten) pectinoides n. sp.

Pecten (Pecten) pectinoides n. sp., Trans. Amer. Paleont. Soc.,
Philadelphia, vol. 7, pt. 1, p. 712 (text, non figs.,
1873).

Description.— Shell large, subcylindrical; dorsal surface
large, slightly concave, diverging at an angle of about 90°; right
valve decidedly convex, sculptured with nineteen to twenty-two
strong, high, almost square, radial ribs, their edges and tops pe-
tially slightly rounded, separated by narrower, shallowly channelled
interspaces; in the interspaces and on the flanks of the ribs ob-
scurer, fine slightly raised concentric lines present; left valve
slightly concave, with the same number of narrower, stronger, square
radial ribs, with deep, flat interspaces of the same width or slight-
ly wider; concentric lines more prominent than in the right valve
and occasionally extending across the ribs, but less numerous
on the ribs than in the interspaces; submargins without radial

sculpture, relatively wide and forming a steep ledge on the left valve; surface subequal, with weak radial ribs and fine concentric lines; interior ventral margin deeply excavated.

Dimensions.— Left valve.— Lat. 30 mm.; alt., 45 mm.; length of hinge, 25 mm.; Immature right valve.— Lat., 25 mm.; alt., 29.5 mm.; diam. 7 mm.; length of hinge about 15 mm.

Remarks.— On the left valve the strong radial ribbing does not terminate abruptly dorsally, the lower ribs being followed by a few, weaker, closer radials, which probably become obsolete leaving the submargin without radial sculpture. The lateral margins on the single mature left valve are proportionately shorter than on the younger ones and more concave, while the fine concentric lines on the disk are not as prominent. Young right valves are proportionately less convex, with lower and narrower ribs and stronger concentric sculpture which overrides the ribs.

P. barretti is distinguished by the very convex, almost square, strong, almost square radial ribs and slightly concave left valve, with usually strong, but narrower and sparser radials. It has been confused with P. horner (Lebb) (1), described from Canada (1).

(1). Trans. Amer. Paleont. Soc., vol. 3, p. 127, 1912, (as Julina horner).

and later reported from Africa (21). That species, however, more recent fossil remains are also available; left valve with

(21). Osbo, J. H., Trans. Acad. Sci. Philad., vol. 11, no. 1, p. 107, 1891, (as Palaeo lanceol).

slightly broader and rounded ribs, narrower laterally and more or concentric shell side which overlies the ribs, as sometimes on the inner margin of the left valve the ribs are slightly

ly raised; right valve with ribs more rounded and auricles without radial. The figure 2. Palaeo lanceol (2) has more angular ribs, with the concentric lines on the left valve slightly

(22). Trans. Acad. Sci. Philad., vol. 11, no. 1, p. 107, 1891. (= Palaeo lanceol (21) 1891, 1903.)

margin, but on the right margin.

This species is named in memory of Mr. Lucas Barrett, the Director of the early Jamaican Survey, whose premature death was largely responsible for the hopeless incoordination of the published results of that organization's investigation.

Occurrence.-- Lower Miocene: Bowden beds, Bowden Jamaica (Dall, 1898).

Right valve, attached to the shell, more line-
marked, especially on the left; the right valve, slightly smaller, slightly more rounded, the outline of the right valve the radial lines between the obsolete "ribs" but feebly impressed, the surface more or less polished, with very faint, irregular, somewhat worn areas on the disk; the concave left valve with the umbonal portion almost smooth, the interspaces between the low ribs usually slightly raised medially; the concentric fine lines more conspicuous than on the right, though still faint, and more regular; the lines decidedly sinuous on the right anterior auricle; on the interior of the left valve the paired lirae visible for only a short distance from the margin, the interval between the two members of a pair more deeply channelled than the interval between two pairs, the opposite of the condition on the right valve, with lirae extending further up toward the umbo.

Dimensions.-- Right valve.- lat., 16 mm.; diam., 16 mm.; length of hinge, 21 mm. A left valve.- lat., 17 mm.; diam., 16 mm.; length of hinge, 21 mm.

Remarks.— The right valve, very convex and inflated, and slightly broader, slightly strongly defined left valve of this species are characteristic of the genus *Strophomena*. The ribs on both left valves are distinct and somewhat curved.

P. bowdenensis is larger, wider and more robust than *P. linearis* (1), but the ribs of the left valve are more widely spaced and the left valve is more strongly inflated than the right, separated by narrow impressed lines. *P. medius* Lamarch (2) is

(1). *Trans. Am. Mus. Nat. Hist.*, vol. 13, p. 200, 1880; *Geol. Surv. Terr.*, vol. 1, *Platan*, pl. 1, fig. 13, 1887.

more robust than *P. linearis*. The right valve of *P. linearis* is

Dall (3) is smaller, with less poorly defined ribs on both valves.

(2). *Ann. Mag. Nat. Hist.*, vol. 8, p. 187, 1819; *Chambers*, *Trans. Zool.*, vol. 7, pl. 60, fig. 107, 1827, 1828.

(3). *Proc. Acad. Nat. Sci. Philadelphia*, 2nd ser., vol. 8, p. 379, pl. 17, fig. 10, 1901, and *P. linearis* (1880), 1881.

The left valve of the *Strophomena* from Tuxtepec, Mexico may be *bowdenensis*, but the interspaces seem to be too flat and deep for that species.

Comparison.— *Strophomena* *linearis* (1880), *Trans. Zool.*, vol. 7, pl. 60, fig. 107, 1827, 1828. *Strophomena* *linearis* (1880), *Trans. Zool.*, vol. 7, pl. 60, fig. 107, 1827, 1828.

PLATE (LITHO) 12. 1931.

The presence of a second layer of the shell is indicated by presence of a small vent valve. The shell is very thin, feebly convex; exterior surface of interior with narrow, very weak, rounded radials, obsolete toward the base, separated by flattened interspaces about half as wide; concentric increments feebly prominent; interior of the valve with small radial ribs of about the same order of magnitude as the external ones.

Externally this form is very close to 2. reticulata (1), but comparison with material in the Philadelphia Academy collection

- (1). John. F. L. Reel. Philadelphia, vol. 59, pp. 711-712, pl. 25, fig. 2, 1930 (Nat. P. (Academy) reticulata (1930), pp. 710-712, pl. 25, fig. 2).

from the Gatun beds shows that the Gatun species has external radials that are slightly higher toward the ventral margin and internally the interspaces between the radials are narrower until near the margin where they suddenly become wider and deeper, the ribs therefore becoming narrower and higher. It is possible, however, that these differences are due to the difference in characters of various growth periods, only fragments of large valves of reticulata being available.

The reticulata form is restricted from the reticulata by its less convex contour, the presence of flattened interspaces

between two external radicals and of internal radical also instead
of paired lines. -

Fig. 100. - *Thymus* (L.) : *Thymus* (L.), *Thymus* (L.).

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Description.— "Lower shell valves of a species closely resembling ornatus were obtained at Boston; the lower and upper valves are practically the same, but the ribs (transverse and radial) are single, subequal, and not fasciculated, and are separated by simple narrower interspaces not radially threaded. The young of ornatus, as far as observed, seem to always have one or more interstitial riblets. I therefore propose for the present form the varietal name of ornatus, which is proposed to be retained if the difference is confirmed by the characters of adult specimens." (Ill., 1894).

Line drawing.— Section, Ill..

Shell small, thin, subequivalve, suborbicular, the height slightly exceeding the width, equilateral, excepting the auricles,

moderately inflated; right valve small; low inflated with the left; dorsal margin strongly convex to apex of the right valve; both valves sculptured with twenty to twenty-five slender, square to subround radial ribs, separated by narrow interspaces; in the interspaces and occasionally over the ribs fine, imbrications, slightly raised concentric lines present, rarely causing a few anterior and posterior ribs to be scabrous; submargins without radial sculpture as with the valves, formed by slightly raised lines with those on the disk; hinge long, auricles decidedly unequal, especially on the right valve; byssal notch deep and sharply sinuate; both auricles sculptured with irregular radial ribs and concentric lines, the sculpture of the anterior auricle coarser and more decidedly imbricated.

Dimensions.-- Right valve: lat. 11.5 mm.; alt., 1.5 mm.; diam., 1.9 mm.; length of hinge, 7.5 mm. A left valve: lat. 10 mm.; alt., 1.5 mm.; diam., 1.1 mm.; length of hinge, 7.5 mm.

Remarks.-- The shell, thin, delicately sculptured valves of this species are very abundant and the individuals range in stages of growth from mature to very young. This abundance and the constancy of the above noted, marked differences between it and the recent P. ornatus Lamarck (1) testify to the advisability of rais-

(1). Ann. Mus. Nat. Hist. Paris, vol. 1, p. 133, 1801; Proceedings, vol. 1, p. 334, Dec. 5, 1801.

The Dall's described here is a small form. The outline of the shell is somewhat variable, some of the shells being more suborbicular than the typical elliptic elongate form. In some forms the anterior submargin is narrower than the posterior one, while on the posterior one radial sculpture may or may not be present. In general, this species is characterized by its small, thin shell, suborbicular and moderately inflated outline and numerous, finely sculptured ribs. The right valves are especially conspicuous because of their compression and unusually long anterior auricles. The few individuals with rounder ribs are slightly narrower anterior and posterior with difference from the young of the complete P. (Ampliatom) submarginatus n. sp. of the same size by having more numerous and more slender ribs, narrower interspaces, with at no time all the ribs scabrous.

Toula's figure reproduces an incomplete right valve which agrees, as far as the figure is concerned, with submarginatus. It is noted, however, that the ribs disappear towards the middle of the disk. Since only two fragmentary valves it is difficult to determine whether his form is identical.

Occurrence.— Upper Miocene: 3 localities (Dall, 1898).

Lower Miocene: Bowden beds, Bowden, Jamaica, (Dall, 1898).

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- 100 -

Pecten (Pecten) *marginatus* A. 37.

Description.- Shell small, thin, subcircular, flattened, wider than wide, the dorsal margin slightly convexly; external surface sculptured with short twenty-three series, prominent, unequal, unequally spaced radial ribs of inconstant width, some extending only a little more than half of the distance to the umbo and all becoming obsolete before the umbo is reached; the ribs finely nodulated along irregularly spaced concentric lines; auricles unequal, with relatively prominent radials roughened by overriding concentric lines; byssal notch prominent.

Dimensions.- lat. 1 cm.; alt., 5 mm.; thickness, .5 mm.

Remarks.- Although the single right valve of which this species is composed is doubtless very common, the unequal, irregularly spaced and nodulated radials definitely distinguish it from the other members of the section.

Occurrence.- Lower Miocene: Amberg beds, Bavaria, Germany.

- 1 -

PACIFIC (SUBGENUS) GASTRIPUS n. sp.

Description.- Shell small, 6 in., covered, the right valve 1: subequal to width; small narrow 1: external sculpture of sloped ribs, rounded ribs, covered by spiral ridges, becoming obsolete on the dorsal half of the shell; concentric sculpture of fine, microscopic granular striae over the entire surface; umbones subequal, the right anterior ventral with radial, with superimposed concentric lines, scabrous along the hinge; byssal notch prominent; interior of the valve with broad radial undulations corresponding to the external intercostal spaces.

Dimensions.- Lat. 7 mm.; alt., 7.5 mm.

Remarks.- This species also is characterized by a small sized valve. It is distinguished by its 2: small rounded 1: fine concentric striae. Bell (1) has described a closely related form, G. almonia, from the Sholes; it has more numerous and more prominent radials.

(1). Trans. Wagner Proc Inst. Sci., Philadelphia, Vol. 7, pt. 1, p. 740, pl. 71, figs. 10, 11, 12.

Occurrences.- Type locality: Sholes, Oregon, U.S.A.

the left valve, the right valve being very much inflated, the concentric lines small, regular; left valve with the same number of ribs, but more, very irregular and more numerous than the right, the interspaces giving the concentric lines to the bottom of the valve; the growth lines on the ribs were most distinct on the right valve; submargins on both valves smooth, except for very fine concentric lines; umbones subequal, the dorsal with two to five small radial ribs, decreasing in prominence from the margin of the high or convex dorsal portion, the ventral surface covered with fine concentric lines; anterior auricle sculptured with three to five usually slightly coarser ribs of irregular width, slightly roughened by the over-riding, inconspicuous concentric lines; cardinal crura prominent; interior ventral margin deeply crenulated, with lirations extending toward the umbo.

Dimensions.— Right valve: lrt., 31.5 mm.; alt., 25.5 mm.; diam., 5 mm.; length of hinge, 15 mm. Left valve: lrt., 31.5 mm.; alt., 25.8 mm.; diam., 5.3 mm.; length of hinge, 14 mm.

Remarks.— This form is by far the most common in the collection. The right valve is most inflated, while the left is the least inflated, and is usually more or less inflated.

The degree of inflation of both valves is subject to slight variation; the most inflated forms are also less orbicular, being higher than wide. The difference in the character of the radial sculp-

shape in the two valves is similar. In the left valve, since the interspaces are wider than on the right, the radial ribs are more numerous and the apical, ventral and dorsal ribs are more distinctly marked. Left valves are usually more suboval than right ones. The ribs of immature left valves are more rounded, almost smooth, slightly more so than on the right valves. After some while in culture the ribs become more interspaces wider.

The strongly inflated right valves, with the more sharply chiseled ribs and the decidedly less convex left valves, with lower, more rounded ribs are readily distinguished from the commoner species. The type E. parvicornis (1) is shown in figures 4-6, 1908.

(1). Journ. N.H. Mus., Washington, Vol. 35, No. VII, Pl. 10, Figs. 4-6, 1908.

narrower and lower radials. Right valves may be confused with the young of E. parvicornis (1), from the same locality, and (1). Journ. N.H. Mus., Washington, Vol. 35, No. VII, Pl. 10, Figs. 4-6, 1908.

the Catun form is less inflated, with more numerous (twenty-five) narrower radials, narrower and shallower interspaces; since the

1946 (see my *Journal of the Royal Society of Medicine*, (1946) 39, 100-101).
In 1947, I was elected to the Council of the Royal Society of Medicine.
1948 (see my *Journal of the Royal Society of Medicine*, (1948) 41, 100-101).

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PECTEN (AS-PECTEN) LACINIOSUS N. SP.

Pecten as-pectatus Say, 1806, Journ. Acad. Nat. Sci. Philad.,
vol. 22, p. 234 (non Sowerby, 1850).

Pecten origonum Say, 1807, Trans. Am. Coll. Nat., New York,
vol. 13, p. 253, (non Sowerby, 1850).

Pecten as-pectatus Say, 1807, Journ. Acad. Nat. Sci. Philad., vol. 1,
p. 115 (non 114), ex parte, non Sowerby, 1850.

Pecten origonum Say, 1807, Journ. Acad. Nat. Sci. Philad., 1807.

Pecten origonum Say, 1807, Journ. Acad. Nat. Sci. Philad., vol.
13, p. 253, (non Sowerby, 1850).

Pecten (As-pecten) as-pectatus Say, 1807, Journ. Acad. Nat. Sci. Philad.,
vol. 1, p. 115, (non Sowerby, 1850).

Pecten as-pectatus Sowerby, 1850, Journ. Acad. Nat. Sci. Philad.,
vol. 1, p. 115, (non Sowerby, 1850).

Pecten (As-pecten) as-pectatus Sowerby, 1850, Journ. Acad. Nat. Sci. Philad.,
vol. 65, p. 601.

Description.- Shell of medium size, suborbicular, slightly convex,
the auricles, subequivalve, both valves moderately convex, suborbi-
cular, with the height and width virtually equal; outline, exclus-
ive of the auricles, strongly convex, slightly notched; hinge
straight, about two-thirds of the width of the shell; dorsal mar-

slightly, their distal ends more rounded on the left valve than on the right; external sculpture similar to that of *P. 101*, with sixteen to twenty prominent radial ribs, more or less confined to the dorsal half of the shell, broader and more rounded on the ventral half, separated by narrower interspaces; the ribs and interspaces in the ventral half of the shell ornamented with radial rows of short, blunt scales, smaller in the interspaces, less numerous on the dorsal half, reduced to a single row and often absent in the interspaces; submargins sculptured with fine, narrow, irregularly spaced, squamose radial ribs; auricles broad, the anterior longer, with a deep byssal notch, both produced with squamose radial ribs of irregular width, wider and higher than those on the submargins, on the anterior auricle the ribs wider and the scales more prominent than on the posterior; interior of the shell with paired lirae separated by excavated intervals.

Dimensions.— A right valve: lat., 51.5 mm.; alt., 31.5 mm.; diam., 1 cm.; length of hinge, 12.5 mm. A left valve: lat., 53.2 mm.; alt., 32 mm.; diam., 1.1 cm.; length of hinge, 12.5 mm.

Remarks.— *P. maculosa* is a common form in the Tertiary, and is one of the most wide-spread of the mid-Tertiary Pectens in the Caribbean region, having been reported under various names from almost all localities where deposits of that age have been explored. The characters are fairly constant, although the degree

of inflation is subject to slight variability. The scales show a tendency to alternate on adjacent rows and except near the ventral margin of adult shells the rows are not separated by definite grooves. The majority of the specimens have nineteen ribs. The lateral directions usually extend over more than half of the distance to the umbo, although on thick shells the distance is less. Some shells are less inflated than others, being flatter than wide, the sculpture on the interspaces is reduced to radial, raised scaly lines, the ribs are merely roughened and their distal ends squarer.

This species is recognized by the scabrous character of the sculpture and the almost constant number (nineteen) of distally subequal ribs. It is closely related to the *Pilumnus* but distinct from *P. cooperi* (1), with which some first confused it.

(1). *Thomson. Zool.*, vol. 1, p. 54, pl. 33, figs. 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

but the recent form is larger and individuals of the same size are usually less orbicular, more inflated, with steeper dorsal margins, the scales arranged in more definite radial series and more prominent in the interspaces. Brown and Pilsbry have described two varieties of this species; as *oxygonus canalis* (2) from

(2). *Proc. Acad. Nat. Sci., Philadelphia*, vol. 4, p. 122, pl. 1, fig. 2, 1881.

discovered that it is a common form in the later part of the Guppy collection. There is no doubt that it is the same as the thetidis described by Gabb in this common form, as all the specimens are very similar to those with which I have been working and probably with one of the valves under that name in the Heniker collection at the British Museum (1).

(1). Information from Mr. G. H. Guppy, by Dall, loc. cit., pp. 714-715, 1898. In addition to this valve there are others which certainly are distinct.

Further of a "Juncus" section with the recent oxyconus, an error which he later corrected and followed Gabb's example in calling it oxyconus, indicated that he had the present form in mind. In this connection it is surprising that Dall used thetidis in a manner "which would agree with usage as seen in the Guppy and other collections". (2) Apparently Guppy had this common scabrous form labeled

(2). Dall, G. H., loc. cit., p. 715, 1898.

The thetidis form in the collection was called thetidis by Guppy.

The Santo Domingian specimens of sumplens reach a slightly larger size than the Bowden ones, with the scales arranged more

Definitely in lines radiating toward the ventral margin, the radial
separated by shallow grooves, an arrangement which is consistent
with the increased in size, as is shown by the radial pitting.
The lateral radial ribs, larger than the other ribs, and a
narrow, scabrous medial rib in the interspaces near the margin.

The radial resembles Strophomena in shape, from the dorsal view;
it differs from Strophomena by its more inequilateral outline, higher,
thinner ribs, their centers with a shallow notch, occupied by a
narrow radial on either side, with another radial near the base,
the surface of the radials roughened by irregular, low elevations,
but not definite spines, along the entire radial on either side.

Strophomena.-- Lower Silurian: Strophomena (Strophomena, 1855;
Linn, 1877; Dufrenoy, 1874, 1876; Hall, 1893); Strophomena (Strophomena, 1917);
Corasmo (Hall, 1893); Strophomena (Strophomena, 1855;
Linn, 1877; Dufrenoy, 1874, 1876; Hall, 1893).

Physa (A. 1850/1) 31. 10. 1850.

Physa augustiniana Payson, 1840, Trans. Amer. Mus. Nat. Hist., vol. 1, p. 49.

Physa augustiniana Payson, 1840, Trans. Amer. Mus. Nat. Hist., vol. 1, p. 49.

Physa (A. 1850/1) augustiniana Payson, 1840, Trans. Amer. Mus. Nat. Hist., vol. 1, p. 49.

Not P. oxycantha Payson, 1840, 1841, 1842, 1843, 1844, 1845, (= P. augustiniana N. S.).

Description.-- "Gastropod, subglobular, thin, costellae radiantes 19, supra-auricularis, interstitiales aequalibus lineis incrementi continuae decussatis; costis inaequalibus, laevibus, radiatis costellatis, costellis transverseis." (Payson, 1840).

Type locality.-- Santo Domingo.

"Shell small, suborbicular, with nineteen to twenty-one sharply keeled ribs separated by V-shaped interferences, with little-elevate, sharp, thin, concentric linear striation; form, round, cardinal crura well marked; left valve less convex than the other. Alt. and lat. about 15 mm." (Payson, 1840, from type of P. augustiniana Payson).

Shell small, well inflated, inequilateral, sub-ovate, slightly more produced and convexly rounded posteriorly; cardinal dorsal margin lower than the anterior; right valve sculptured with twenty-two or twenty-three angular radial ribs, the summit below slightly rounded and on adult shells the ribs rounded at the ventral margin, separated by smaller interspaces, with the bases of the ribs rounded; on the slopes of the ribs and in the bottom of the interspaces fine, closely spaced, sharply raised concentric lines present, usually not rising above the summits of the ribs; left valve sculptured with eighteen or nineteen similar, but broader and more sharply angular, ribs and similar concentric lines; submargins of both valves smooth except for very fine, inconspicuous concentric striae; auricles subequal, with four or five narrow, unequally spaced radial ribs, crossed by concentric imbrications; cardinal crura conspicuous, finely striated.

Dimensions.— A left valve: lat., 14 mm.; alt., 14.1 mm.; diam., 3.2 mm.; length of hinge, 8.2 mm. A right valve: lat., 13.8 mm.; alt., 13.8 mm.; diam., 3 mm.; length of hinge, 8 mm.

Remarks.— The two valves are of about equal size, but the left displays a tendency to be slightly less convex and more inequilateral. The radial sculpture on the two valves is quite different; on the left valve the ribs are fewer, broader and more sharply angular, but still very slightly rounded, especially at

the ventral margin and in the umbonal region. The ventral ribs overlap the ribs but rarely, and then are very thin. The 2 apical ribs, larger than those described, that numerically are lower to this species, have ribs which are normally rounded and even flattened at the ventral margin. As usual, young shells are more rounded than adults. The smaller ribs are the distinguishing feature of this species, which numerically is not a conspicuous element of the species group.

As well pointed out, Gabb's Strophomena strophomena agrees with Derby's description of strophomena. The fact that this form is not similar to any of those under the name strophomena in the earlier collection, in Dr. Dall's collection, 1898, would not have much weight since it is evident that labels and shells in that collection are improperly associated, a confusion which in all probability occurred after the completion of Derby's work. The type of strophomena is described as follows: specimens, with the median and posterior ribs sharply angular, the summits of the anterior six or seven slightly rounded, the posterior submargin bearing weak tubercles.

Geographical.— Upper Miocene: Santa Monica (Gabb, 1873; Dall, 1898); Lower Miocene: Bowden beds, Oregon, (Dall, 1898). (Dall, 1898).

FIGURE (A) (IP 10000) (MONTANA 1. 1942).

Description.— Shell small, subglobular, subcylindrical, subellipsoidal; right valve more inflated than the left; exterior surface of right valve sculptured with twenty-one rounded or subrounded radial ribs, separated by slightly narrower, rounded interspaces; concentric sculpture of fine, but conspicuous, concentric raised lines, occasionally overriding the ribs in the distal third of the shell and in the same region rarely extended sufficiently to form continuous concentric lines of slightly elevation, inconspicuous, thin, slender; left valve sculptured with seventeen or eighteen strong, square ridges separated by deeply impressed interspaces of the same width, with the concentric lines usually prominent in the interspaces and occasionally appearing on the ribs; submargin, denticles and cords as in P. oxygonus.

Dimensions.— Right valve: lat., 12 mm.; alt., 10 mm.; diam., 1.8 mm.; length of hinge, 5.5 mm.; A left valve: lat., 10.7 mm.; alt., 9.7 mm.; diam., 1.4 mm.; length of hinge, 5.2 mm.

Remarks.— P. elachistus, represented by several valves, all of which probably are not mature, closely resembles P. oxygonus in general features, but the sculpture is decidedly different. Right valves of elachistus have fewer, (one or two less) broader, more rounded ribs, with correspondingly narrower interspaces, than

the lower of apogonoid of the same size; in left corner the inter-
ferences are even sharper, since in elacilatus the apogonoid are
square and the interferences almost generally horizontal, while in
apogonoid both vertical and interferences are horizontal. Left valves
of the net series are less than three times of apogonoid.

Occurrence.— Long series: 10000-10000, 10000, 10000.

- 10 -

Caryophyllidae (Gastropoda) - *Alveolites* n. sp.

Description.— Shell of median size, 21 mm; low-spired; left valve moderately convex; dorsal margin bounding at an angle of slightly more than 90°, the posterior dorsal carina being longer than the anterior, causing a slight protrusion anteriorly; exterior surface sculptured with seventeen strong, almost flat-topped, but rounded, radial ribs, separated by interspaces of virtually the same width; concentric sculpture of relatively conspicuous, fine, sharply raised concentric lines, overriding the ribs except in the distal half of the shell, the lines being arched in the interspaces with the dorsal side toward the ventral margin; submargins sculptured with concentric lines, finer than those on the disk; apical carinal, with small but prominent nodules; cardinal crura prominent; right valve not known.

Dimensions.— Left valve: lat., 21.5 mm.; alt., 20.5 mm.; diam., 2.8 mm.; length of hinge, 7.5 mm(?).

Remarks.— This is a small, low-spired form, known from the material at hand by a single left valve. The strong, subrounded radial ribs and, above all, the conspicuous, raised concentric lines are the chief characters of the disk, which, in some portions of the ribs, serve to distinguish this form from the associated *Alveolites*. The small but prominent nodules on the apical carinal

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Small (Dall, 1899) Dall.

Dall (1899) Trans. Acad. Sci. San Francisco, 1899, 2: 115, pl. 115, fig. 115. 1899-1900, 2: 115, pl. 115, fig. 115. 1899, 2: 115, pl. 115, fig. 115.

Description.-- Small, slender, somewhat flattened, with a slightly convex, smooth, and the surface covered with microscopic, irregular, concentric, and the anterior slightly, 1899, 2: 115, pl. 115, fig. 115. Very little, 1899, 2: 115, pl. 115, fig. 115. with no ctenolium; interior smooth, without lirae or developed areas; trace of concentric lines; anterior, 1899, 2: 115, pl. 115, fig. 115. with no ctenolium; interior smooth, without lirae or developed areas; trace of concentric lines; anterior, 1899, 2: 115, pl. 115, fig. 115. margin bearing a sharply cross-striated, very distinct provinculum; basal margins flattened, posterior margin slightly compressed. Alt. 1, 1899, 2: 115, pl. 115, fig. 115.

"The abundance and uniformity of this little shell testify to its adult character. Occasional individuals show a thickened line laterally on each side, as the dorsal edge of the provinculum, like some recent species, and also traces of coloration in blotches." (Dall, 1899).

Type locality.-- Bowden, Jamaica.

Remarks.— Preserved individuals of this small species are present in both collections. On all except the most common shells, faint, concentric growth lines, due to interruption in the growth of the shell rather than to sculpture, are visible, and on a few are also translucent, polished valves these markings are quite distinct. Radiating lines on the auricles are seldom observed and when present they are subordinate to the concentric growth lines. In the anterior region of the valves the concentric lines are most prominent and are slightly roughened.

Typical individuals are of the following dimensions:

A right valve: lat. 5.2 mm.; ht., 5.5 mm.; length of hinge, 5.5 mm.

A left valve: lat. 5.2 mm.; ht., 5.5 mm.; length of hinge, 5.5 mm.

The small, thin, smooth valves of this species, with the marked provinculum cannot be confused with any of the coexistent *Pectin*. *Pecten (Cycloneta) elliptica* from Gatun (1) is smaller, with a more rounded outline and faint sculpture.

(1). *Proc. Acad. Nat. Sci., Philadelphia*, vol. 64, pp. 311, 312, text fig. 5, 1912.

References.— *Recent Mollusks*: Dall, *Proc. U.S. Nat. Mus.*, 1909; *Recent Mollusks*: *Smithsonian Misc. Zool.*, 1910; *Pecten* (Dall, 1909). *Pecten*: *Smithsonian Misc. Zool.*, 1910.

Alonium pecten (Gabb) Gabb.

Station 10000 N. S.

PECTEN (ALONIUM) PAPYRACEUS (Gabb) ?

Electronotia papyracea Gabb, 1877, Trans. Am. Geol. Soc.,
ser., vol. 35, p. 387.

Alonium papyraceum (Gabb) Gabb, 1879, Trans. Wacker Soc. Phil.,
Philadelphia, vol. 7, pt. 1, p. 713.

Pecten (Alonium) papyraceus Gabb, 1880, ibid., p. 707.

Description.-- Small discoidal, sub-circular, and slightly
longer than wide; slightly inequilateral; apex centrally located; base
slightly convex, or covered only by thin rim of growth; in-
ternal surface marked with small double radial ridges. Length
from back to base 2.2 inch, width 1.5 inches." (Gabb, 1877).

Type locality.-- Santa Barbara.

Remarks.-- The collections at hand contain a small fragment
of a large specimen and the fragmentary portion is yellow. The
fragment shows that the radial portion of the external surface is
smooth except for faint, closely spaced concentric lines; while
the interior is sculptured with paired radials. Both the distance
between the radials that form a pair and that between adjoining

pointed to produce them on the type of amphistoma, American form
 (1888-1889). The structure differs very slightly from amphi-
stoma (1888-1889); the structure is not identical, micro-
 scopic camptonectes striction. Since the ventral third of both
 valves has been broken off it is difficult to determine the pos-
 sible of the ventral margin; the amphi-stoma (1888-1889) is
 near the ventral margin, they are obsolete before reaching the
 portion which is preserved.

The distribution features of amphistoma and the associated
 system form, smooth surface and dorsal (1888-1889). I cannot
 determine the amphi-stoma (1888-1889) is referred to this species. The amphi-
 of its separation from the Miocene and Pliocene P. mortoni Rav-
 and (11), is distinct, but that species is, however, amphi-stoma (1888-1889).

(11). Amphi-stoma (1888-1889), Amphi-stoma, vol. 1, p. 10, 1888;
Amphi-stoma and Amphi-stoma, Amphi-stoma, vol. 1, p. 10, 1888;
 pl. 17, fig. 1, 1888.

It is also possible; P. 1888 (1888-1889) (11), Amphi-stoma, /o /n
 has the auricles depressed below the plane of the disk. The re-

(12). Amphi-stoma (1888-1889), Amphi-stoma, vol. 1, p. 10, 1888;
 pl. 17, fig. 1, 1888 (= Amphi-stoma (1888-1889) of Amphi-stoma (1888-1889),
Amphi-stoma, vol. 1, p. 10, 1888. Amphi-stoma (1888-1889), vol. 1, p. 10, 1888;
 pl. 17, fig. 1, 1888.

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Summary. -
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Station (specimen) no. 11111.

1911 (P. 11111) (11111) (11111).

Description.— Shell small, thin, compressed, subtriangular, higher than wide; dorsal margin with a steep slope; external surface of left valve sculptured with very fine concentric striae, obsolete toward the dorsal margin, with faint approximations of a few coarser, more widely spaced concentric lines near the ventral margin; dorsal half of the shell bearing exceedingly fine radial striae, barely visible under the microscope; the entire surface covered with camptonectes striations; internal lirae faintly visible from the exterior; umbonal shell, with a small central disk, separated from the disk by a scarcely impressed line; interior with ten prominent, relatively heavy lirae, extending about half the distance to the umbo, thickened toward the ventral margin, but terminating before the margin is reached; dorsal extremities of the lirae acute, except the two nearest the dorsal margin, which are rounded; right valve not known.

Dimensions.— H. 1.5 mm.; D. 1.1 mm.

Remarks.— It is somewhat similar to the form of the shell in the P. 11111. It is very similar to the form of the shell in the P. 11111. It is very similar to the form of the shell in the P. 11111.

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(11). Coll. Mus. Compt. Biol.,
... ..

... ..

The recent form is larger, more orbicular, with larger auricles,
less conspicuous external sculpture, the internal lirae not quite

(12).

as heavy, less swollen and pointed at their distal end, and extend-
ing further toward the umbo.

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Spindellia bifrons 1886.

Spindellia bifrons 1886.

Spindellia bifrons 1886.

Spindellia bifrons Coverley, 1887, Journ. Acad. Nat. Sci. Phila.,
vol. 1, p. 17.

Spindellia bifrons Coverley, 1887.

Spindellia bifrons Coverley, 1887, Journ. Acad. Nat. Sci. Phila.,
for 1887, p. 176.

Spindellia bestrynchilis Coverley, 1887, Journ. Acad. Nat. Sci. Phila.,
vol. 1, p. 17.

Spindellia bestrynchilis Coverley, 1887, Journ. Acad. Nat. Sci. Phila.,
p. 17 (cover slip).

Spindellia bestrynchilis Coverley, 1887, Journ. Acad. Nat. Sci. Phila.,
vol. 1, p. 17.

Spindellia bestrynchilis Coverley, 1887, Journ. Acad. Nat. Sci. Phila.,
vol. 1, p. 17, pl. 18, fig. 1.

Spindellia.- "Spindellia bestrynchilis, 1887, Journ. Acad. Nat. Sci. Phila.,
vol. 1, p. 17, pl. 18, fig. 1; *Spindellia bestrynchilis*, 1887, Journ. Acad. Nat. Sci. Phila.,
costis 5 ad 6 spiniferis; area cardinali alterius valvae angustiori,
alterius latiori." (Coverley, 1887).

Type locality.- Santo Domingo.

"The type form of this species has a relatively small number

... (Hall, 1901).

The ... species. They are thin, slightly auriculate, slightly inflated, moderately inequilateral, the posterior side being more produced; ... bearing at irregular intervals short, relatively stout spines; secondary radial ribs and striae of irregular width intercalated between the primaries, transversely roughened or slightly spinose; in the interval between two primary ribs one secondary rib usually more prominent and more obviously spinose than the others; auricles poorly developed, their surface ornamented with a few small spines ... lat., 12.5 mm.; alt., 12.1 mm.; diam., 1.1 mm.; length of ... 1.5 mm.;

A very small, ... suppressed and the few spines near the ventral margin are dorso-ventrally compressed.

Description.-- Small, biconvex, transverse, cylindrical, with a maximum diameter of 1.5 mm. and a height of 1.0 mm. The shell is not prominent and hardly exceeds the surface, the shell is slightly inflated. From very young individuals, including Jordan, are noted of such an increasing size and weight should be considered a distinct variety. The Jordan form referred to this species is characterized by its unusually low, somewhat flattened, relatively low, low, narrow, spinose ribs, with intervening non-spinose secondaries and longitudinal striae on and between the secondaries. Specimens from the type locality have the primaries narrower and less spinose, but apparently these characters are susceptible to variation, for specimens from other localities that are comparable in other features to those from Jordan have the primaries of the type locality form, the ribs being as narrow as some specimens. The variability of Jordan's form may also be noted in the inflated, more inflated, with wider and more vertical ribs.

A very closely related form, P. oblongus Mill, (1) occurs

(1). Proc. U.S. Nat. Mus., 1895; Ann. Ent. Soc. Am., 1895, p. 15, pl. 1, fig. 1, 1915.

in the Chipola and Oak Grove faunas; it is more oval and inflated, with more numerous spinose ribs and concentric striations on the

Alas., 1880; 1881; 1882; 1883; 1884; 1885.

Remarks.-- A specimen of an extremely common form, the largest right valve and a smaller left valve, the reconstruction of this central-carinated species. The dorsal process of the central and posterior dorsal portion of the shell and the some uncertainty attends its position; but in so far as can be determined, the outline, sculpture and auricles testify to its place in this species. The left valve is decidedly pecteniform since it is only moderately and uniformly inflated, while the right valve is strongly inflated in the umbonal region. In sculpture the two valves are slightly different.

P. exilis is recognized by its subcylindrical shape, small auricles, strongly inflated right valve, sculptured with spinose, broad primary radials and finely scabrous, longitudinally striated secondary, and moderately inflated left valve with more highly developed primary and secondary. P. subquadrata is more inflated, less cylindrical, more like subquadrata, less cylindrical, with more pronounced sculpture, the ribs being much smaller and the spines shorter.

This species is named for Dr. J. W. G. Smith, of the U. S. Geological Survey, who is making valuable contributions to the Vertebrate collection of the first volume.

Occurrence.-- Locality:

has not been recorded from any other place than the Strait of (1).

(1). *Chalcid. Indica*, vol. 1, p. 141, 1891 (F. *Chalcid. Indica*, vol. 1, p. 141, 1891; *Chalcid. Indica*, vol. 1, p. 141, 1891; *Chalcid. Indica*, vol. 1, p. 141, 1891; etc.

(2). *Chalcid. Indica*, vol. 1, p. 141, 1891 (F. *Chalcid. Indica*, vol. 1, p. 141, 1891; *Chalcid. Indica*, vol. 1, p. 141, 1891; *Chalcid. Indica*, vol. 1, p. 141, 1891; etc.

No recent forms, comparable in size, have been available for comparison. The spines of the form which has generally been called *Chalcid. Indica* are more numerous and more variable, and the sculpture is more finely sculptured, but generally the sculpture of the spinose sculpture is decidedly inconstant, an indication of the variability being furnished by the elaborate synonymy given by Hall (3).

(3). *Chalcid. Indica*, vol. 1, p. 141, 1891 (F. *Chalcid. Indica*, vol. 1, p. 141, 1891; *Chalcid. Indica*, vol. 1, p. 141, 1891; etc.

The spines of the form which has generally been called *Chalcid. Indica* are more numerous and more variable, and the sculpture is more finely sculptured, but generally the sculpture of the spinose sculpture is decidedly inconstant, an indication of the variability being furnished by the elaborate synonymy given by Hall (3).

Chalcid. Indica, vol. 1, p. 141, 1891 (F. *Chalcid. Indica*, vol. 1, p. 141, 1891; *Chalcid. Indica*, vol. 1, p. 141, 1891; etc.

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[Faint, illegible handwritten notes]

436, 437, 438, 439, 440, 441, 442, 443 (check list)

1911 10 10 10, 10 10 10, 10 10 10.

[illegible]

Aliphol Vol. 1, No. 1, 1890, 1891, 1892, 1893, 1894,
1895, Vol. 2, No. 1, 1896, 1897.

90, p. 125.

plumose; inferior valve smaller, the rim lower, with several
smaller teeth; lateral teeth larger, more, rather irregular,
enlarged on the exterior; large terminal teeth in each valve
slightly bifid, round; smaller intermediate prominent. Length
one inch and an eighth."

"The valves were about 12 lines, and the lower valve almost
resembled a variety of Stroph. virgata." (Chapman, 1847).

Type Locality.- Cumberland Co., New Jersey.

The British specimens are small, of varying thickness, subtri-
lateral to decidedly inequilateral, moderately or slightly inflat-
ed; surface irregular, usually more or less rounded-tilingular or
subquyte; umbones low, inconspicuous; external surface ornamented
with five to nine strong radial plications, most pronounced at
the ventral margin and not extending to the umbones; concentric
sculpture of irregular, more or less imbricated lamellae, extend-
ing on the plications and at times covering the whole surface, round
scales; when the attachment is not by the umbones, irregular,
small, closely united concentric growth lines radiating from the um-
bones; inner margin of the valves coarsely crenulated by the pli-
cations and usually finely denticulated; interior surface of the
valve irregular.

Dimensions.-- Upper valve: 24.5, 11.5, 17.5 mm.;
lower, 9.5 mm.

Remarks.-- The valves of a small Stroph. and a small Stroph.

ant. In shape and thickness the apical plications of *dentata* resemble those attached to the sides of the valve; but, on the whole, the valves are of median thickness and more or less rounded in outline. The absence of plications on either a portion of the surface of the valve or of the shell depends on the position of the area of attachment and since the right and left valves are not attached, either valve may be dorsal or ventral. The average number of plications is six or seven. Some of the specimens have short, marginal plications intercalated between the primary ones. This feature, together with the small size, the thinness of the shell, suggests that the Bowden forms may be a distinct variety. Their closest relatives are the small size, the broad, subrounded outline and the relatively numerous, somewhat foliaceous plications. The *Kidder* (*Virginia*, North Carolina) and *Hilgerson* (*North and South Carolina*, Florida) *E. marginata* (L.).

(1). Amer. Acad. Nat. Sci., Philadelphia, Vol. 3, pp. 130-137, Pl. 3, Fig. 3, 1891.

is more triangular in outline, with fewer but more prominent plications, the same differences distinguish *densata* from the recent *marginata*. *E. marginata* (L.), *marginata* (L.), in 1891.

(2). Amer. Acad. Nat. Sci., Vol. 3, 1891.

How, if ever, can we find the right balance?

Occurrences.— *Florida*: *Florida* (Dall, 1898, 1915); Tampa silex beds, Florida (Dall, 1898, 1915); Chipola marl, Florida (Dall, 1898, 1915); Oak Grove sand, Florida (Dall, 1898, 1915); Cuba (Dall, 1898, 1915); Jamaica (Guppy, 1874; Dall, 1898, 1915); Miocene: Jalvert- New Jersey (Conrad, 1843; Dall, 1898, 1915), Maryland (Glenn, 1904). *North Carolina* (Conrad, 1843; Dall, 1898, 1915), *Virginia* (Conrad, 1843; Dall, 1898, 1915), *North Carolina* (Conrad, 1843; Dall, 1898, 1915).

Shell, little.

Genus: *Mya* (Goulden) Girty.

Subgenus: *Mya* s. s.

Section: *Mya* s. s.

Mya (*Mya*) *mya* n. sp.

Description.-- Shell small, thin, moderately inflated, bilaterally symmetrical and oblique; ventral rounded anteriorly, posteriorly obliquely produced below, emarginated above; exterior surface sculptured with concentric lines, low and closely spaced, separated by much broader interspaces; the radials relatively distinct and confined to the ventral region, toward the posterior margin becoming shorter and occasionally wanting; narrow, scales at irregular intervals or roughened by irregular incremental lines on the distal third of the shell; posterior submargin relatively wide, long and very deeply impressed; anterior submargin much smaller and less deeply impressed; auricles small, subequal, not differentiated from the submargins; both lateral and submargins sculptured with irregular concentric lines and indistinct radials; cardinal area wide; hinge with a deep, subumbonal and ventral in position, a tooth-like process at the base of the shell; internal ventral margin scarcely affected by the external radials.

Dimensions.-- Length, 1.5 mm.; width, .8 mm.; height,

11 mm., 2.5 mm.; length of disk, 5 mm.

Remarks.- This species is found over a wide range. The radial sculpture is rather weak, weaker than in most species of the section Linea s. s. The anterior impression is unusually long and so deeply impressed that it has a decided influence on the outline; on the other hand, the anterior tubercle is completely differentiated from the disk.

The neck, narrow, slightly anteriorly directed and deeply impressed, long posterior tubercle obsolete. Measurements. 1. Length of disk (1), from the middle of anterior impression, variable, is larger, with greater width and greater depth.

134. Trans. Amer. Ent. Soc., 1911, 31: 111, fig. 1, 2, 3.
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

Differences.- Length of disk: 5 mm. to 10 mm., small, small.

Section between the foot

FIG. (MUSEUM) PLATE

Description.— Shell small, ovate, with all dimensions well inflated; color shining siliceous-tranlucent with subventral mottling; dorsal surface smooth, slightly raised; ventral surface with rounded apex, slightly indented at the lower margin by the gape, obliquely truncated below; truncated posteriorly, subparallel to the anterior transverse fold; external surface without radial sculpture except for a few, feeble, nearly visible concentric lines near the ventral margin, which are about half the length of the shell in the lower ventral region; a few weak, fine, thin, raised concentric lines present on the ventral half of the shell; the entire surface covered with microscopic vermicular markings, resembling camptonectes striation, most prominent on the lower ventral surface, the ornament pit wide, shallow, not projecting into the cavity of the shell; interior of the valve with faint radial markings in the valve-socket series.

Measurements.— Radial lat. measured above the ventral fold 2 mm.; vent. lat., trans. 1.8 mm.; length of hinge, 1.5 mm.

Abstract. - The following is a summary of the results of the investigation of the effect of the various factors on the rate of the reaction, and the mechanism.

The rate of the reaction is found to be independent of the concentration of the reactants, and the reaction has been attempted.

References. - 1. J. H. Plesch, *Trans. Faraday Soc.*, 1936, 32, 1361.

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17-000000 1110073 17, 7,
11100 11150,

(1). Pleioc. Fos. South Carolina, p. 19, pl. 6, figs. 4-6, 1855.

"This form is distinguishable at once by its peculiar sur-

same collection." (Bull, 1914).

Type locality.-- (Bull, 1914).

Shell large, thin, compressed, irregularly subtriangular; irregularly warped and pitted, the pitting sometimes being most pronounced at the ventral margin, but not definitely so; umbonal region occasionally swollen; exterior surface sometimes with fine, discontinuous, wavy radial striae, broken by into longer or shorter portions or interrupted so frequently that the surface of shell contains granules; base of valve right valve elongated, triangular, almost extending to the cardinal margin; internal cardinal "rugosities" very feebly developed or obsolete; right valve with sharp ventral angle, diverging at an acute angle; left valve with a sharply defined, large, triangular umbonal depression into which the crura of the right valve are received, the anterior and posterior distal portions of the depression separated by a triangular elevated area corresponding to the depressed area between the crura on the right valve.

Remarks.-- Several more or less incomplete valves of this species, which the collector is unable to identify, are at hand. It is the only member of the genus Planorbis to be reported in the New York collection. The genus at the present time seems to be confined to the Atlantic coast-

ed, (not visible), and not visible in the illustration, (not visible)
and not visible (not visible) in the illustration (not visible)
ed, (not visible), and not visible in the illustration (not visible).

(1). (not visible).

(1). (not visible), (not visible), (not visible), (not visible), (not visible).

The dorsal surface of the dorsal fin is (not visible) (not visible)
not visible (not visible) of the dorsal fin, (not visible) (not visible) (not visible),
may be smooth or the fine, swollen radial lines may cover the
entire surface. (not visible) (not visible) (not visible) (not visible) (not visible)
radial. The dorsal fin (not visible) (not visible) (not visible) (not visible) (not visible)
developed, (not visible) (not visible) (not visible) (not visible) (not visible). (not visible)
left side, of which only the dorsal fin is (not visible), (not visible)
very (not visible) (not visible) (not visible) (not visible) (not visible) is, (not visible)
ly enough, without the median distal raised triangular area.

is (not visible) in the dorsal fin (not visible), (not visible) (not visible)
covered by the dorsal fin (not visible). (not visible) (not visible) (not visible)
is (not visible), (not visible) (not visible) (not visible) (not visible) (not visible)
surface of the dorsal fin.

(not visible) (not visible) (not visible) (not visible) (not visible) (not visible)
(Dall, 1898).

The Simplex.-- Simplex, Ammonia.

Simplex.-- This is the only form of the genus which has been referred to this variety and has been considered distinct. All of them are small, some reaching 12 mm. in diameter. A. simplex is a well-defined species which belongs to the genus Ammonia and is distinct from Ammonia simplex. The variety simplex is, however, of doubtful validity. The radial striations, which constitute the characteristic feature, are very fine lines on the commissure and occur only on very limited portions of the shell. They are visible only under the microscope. Most of the Anomias in the genus Ammonia are referred to A. simplex although some of them are well marked for the genus Ammonia. Simplex itself may have suggestions of radial striae and for that reason the advisability of establishing a variety for the Bowden forms with mere suggestions of radial striation is questioned. At the present time, however, it seems advisable to retain the varietal name.

A. simplex (1), 17 mm. diam. (2), 12 mm. diam.

(1). 1 mm. diam., 1 mm. diam., 1 mm. diam., 1 mm. diam.

has, in addition to obsolete faint radial striations, weak pustules and obsolete, feeble radial striations. A. umbonata Guppy, an

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[illegible]

(2). $\frac{1}{2} \log \frac{100}{10} = 0.5 \log 10 = 0.5 \times 1 = 0.5$, $\frac{1}{2} \log \frac{10}{100} = 0.5 \log \frac{1}{10} = 0.5 \times (-1) = -0.5$.

[illegible]

(Dall, 1898, 1915).

... [illegible] ...

1. The first part of the document is a list of names, including "John Doe", "Jane Doe", and "John Doe".

James M. Wells 11, 107, 11., . 3 10 11 11 11 11

Abouia spilanthum Linnaeus var., Journal, 1805, vol. 1, pag. 1.

• • • • •

Journal of the American Statistical Association, 1977, Vol. 72, No. 360, pp. 100-101.

1. The first group of people who are interested in the results of the study are the researchers themselves. They want to know if the study was successful in achieving its objectives and if the results are consistent with their expectations. They also want to know if the study was conducted in a rigorous and unbiased manner.

[illegible]

Printed by J. G. & F. S. Gower, Ltd., London, E.C. 4.

[illegible]

Monthly Journal of the U.S. Bureau of the Census, 1964, 10, 1, 1-10.

at number 16 1/2 miles from the station, 1911, 1912, 1913, 1914, 1915, 1916, 1917, 1918, 1919, 1920, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1928, 1929, 1930, 1931, 1932, 1933, 1934, 1935, 1936, 1937, 1938, 1939, 1940, 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590,

2. 75, 200, 37-55. (P. 100, 101.)

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Anomia subulion Webb, 1877, Trans. Amer. Phil. Soc., 1877, vol. 17, p. 377. (non Linnaeus).

Anomia subulion Webb, 1877, Trans. Amer. Phil. Soc., 1877, vol. 17, p. 377. (non Linnaeus).

Anomia subulion Webb, 1877, Trans. Amer. Phil. Soc., 1877, vol. 17, p. 377. (non Linnaeus).

Anomia subulion Webb, 1877, Trans. Amer. Phil. Soc., 1877, vol. 17, p. 377. (non Linnaeus).

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Anomia sp. indt. - Merrill, 1891, Bot. Amer. Vol., 1891, vol. 10, p. 377.

Genus MODIOLUS Lamarck.
Section Brachydontes Swainson.

MODIOLUS (BRACHYDONTES) GUPPYI Dall.

Modiolus (Brachydontes) Guppyi Dall, 1898, Trans. Amer. Mus. Nat. Hist., Philadelphia, vol. 2, pt. 1, p. 784, pl. 22, fig. 16.

Description.-- "Shell small, thin, delicate, minutely and numerous ribs but seldom prominent, general form as in M. crassus, [Dall (1)], but shorter and more rounded, the surface frequently concentrically faintly undulate, inner dorsal margin strongly crenulate, the rest of the shell margin almost smooth, basal end of the valve rounded, dorsal angle obsolete. Alt. 4.5, max. lat., 4.7, diam., 4.5 mm."

"This differs from the last [M. crassus Dall] in its more delicate and less prominent ribbing, its more rounded, thinner, and less angular shell, and in the absence of crenulations over most of the margin, due to feebleness of the sculpture." (Dall, 1898).

(1). 1898, p. 784, pl. 22, fig. 16.

Type locality.-- Japan, Japan.

Shell small, thin, transversely elongate, widest at about the middle of the shell; umbonal region flat, almost terminal; umbonal ridge straight, but rounded, narrower toward the anteriorly; proximal third or more of the dorsal margin straight, forming a subrounded angle of about 140° with the distal portion, which is gently curve or slightly sub-angled; ventral margin slightly slightly concave; posterior margin narrow, abruptly rounded; external surface sculptured with numerous, inconspicuous, rounded radial ribs, separated by interspaces of the same width or narrower; radials usually obsolete on the most convex portion of the umbonal ridge; concentric sculpture of usually faint incremental lines, occasionally exaggerated; hinge often with suggestions of dentition, with two or three projections on the left valve and obscure sockets on the left; proximal portion of the inner dorsal margin conspicuously crenulated, the distal portion weakly crenulated and the remainder of the margin usually smooth or very feebly crenulated.

Dimensions.-- Max. lat. (umbo-ventral) 5.5 mm.; ht. (antero-posterior) 10.5 mm.; semidiam., 1.8 mm.

Remarks.-- This solitary member of the genus is well represented in the material at hand. The width varied considerably, the valve measured being the widest. The angle between the two portions of the posterior margin is not sharp, but rounded or subrounded. A rather surprising feature is the indication of hinge dentition

on a small, shell. One of the left valves is large and small, but distinct, projections, with rest of the same, and sections of two or three similar projections. The right valve is more rounded, but obscure, irregular.

M. marginatus is recognised by its numerous small nodules and by the presence of minute oscillations on each the outer portion of the inner margin. The differences between this species and the larger M. marginatus will be pointed in the above description. In the case of M. marginatus var. subtilis (1), it is

(1). idem.

On the whole, these differences are even more pronounced. The recent M. marginatus (2) is larger, wider, more

(2). idem. Bolt., 1st ed., p. 147, 1898 (= M. marginatus Linnaeus).

covered anteriorly; and the entire inner margin is granular.

Comparison. - Recent : Boulton 1813, Boulton, Journal.
(1813, 1813).

Superfamily: PLEUROMORPHA

Family Verticordiidae.

Genus VERTICORDIA Wood.

Subgenus Trigonolima S'Orbigny.

VERTICORDIA (TRIGONOLIMA) BOWDENI Call.

Verticordia (Trigonolima) bowdeni Call, 1900, Trans. Amer. Phil. Soc., Phila. Acad. Nat. Sci., vol. 5, p. 111.

Description.— "Shell small, rounded, rather convex, with eight or nine anterior spiral ribs with two, subequal lateral ones, then a wide space followed by two almost ribs, then a much wider space with another almost pair beyond it separated by a smooth area, larger in the left than in the right valve, from the posterior margin; the surface when intact is covered with minute granular areolae in rows perpendicular to the ribs; base very weakly impressed in the left valve, less so in the right; tooth of the right valve large and strong, the posterior margin of the left valve modified to form a lamina or lateral tooth received in a groove of the smooth surface. Len. 3.7, Alt. 2.3, Diam. 1.2 mm."

"Very similar to V. bassmani [Call (2)], however the latter

(1). diam.

but somewhat more orbicular." (Dall, 1905).

Type Locality.-- Garden, Jamaica.

Remarks.-- The small valves of this species are abundant in the Alrich collection but much less numerous in the Dyer collection. The largest valve has the following dimensions: Len. 3.5 mm.; alt. 2.5 mm.; thn. 1.5 mm. Dall has noted that this form was labelled "V. proxima d'Orbigny" (1) in Dyer's collection;

(1). In de la Mer, Hist. Nat. polit. et nat. de l'île de Cuba, mollusques, vol. 1, p. 175, pl. 27, figs. 24-25, 1835 (French ed.).

that recent species has fewer, broader ribs and broader interspaces. Alrich (2) has described V. pallidus from the Alrich collection, Florida, Mississippi; it is 13 mm long, more oblong and has fewer ribs.

Occurrence.-- Garden, Jamaica: Garden, Jamaica, Jamaica.

(Dall, 1905).

(2). Testiles, vol. 1, no. 2, p. 180, pl. 1, fig. 1, 1900.

Sobremas Halliell Dall.

VERTICORDIA (V. HALLI) MISSISSIPPIENSIS Dall.

Verticordia (Halliell) mississippiensis Dall, 1903, 2nd ed. *Trans. Phila. Acad. Nat. Sci., Philadelphia*, vol. 5, pt. 1, p. 1911.

Description.- "Shell small, thin, sub-ovate, inflated, with strongly propechoid base; sculpture with short, sharp, regular radial close-set ribs with sharper interruptions; smooth, deep lunar impression in front of, and narrow, U-shaped -like smooth area behind same, the whole surface finely granular; basal margin angularly produced near the middle, internally minutely fluted in center, with ribs; hinge normal; ht. 4.75, base 3.5, diam. 4.5 mm."

"This has a general resemblance to V. mississippiensis Dall, (1) Eocene, but is smaller, thinner, proportionately shorter, -----
(1). *ibid.*, pp. 1910-1911, 1. 19, fig. 1.

and more inflated." (Dall, 1903).

Type locality.- Bowden, Jamaica.

Remarks.- Some of the valves are small and thin, as in the National Museum specimens, one being especially large, with the

Following dimensions: lat., 18.5 mm.; alt., 18 mm.; diam., 18 mm. Some small right valves are decidedly more convex than the average form. Adult shells are heavier, with the marginal distensions more pronounced and the small shell more or less flattened. In view of the large size of some of the valves in the collections which have furnished the material for this study, it is evident that gonioides is less of than gonioides. The British form is closer to Y. gonoides than to Y. gonoides.

(11). Gonioides, vol. 18, no. 2, p. 101, pl. 1, fig. 1, 1905.

For most shells, the shell surface is smooth, with a more or less vertical striae on the outer surface, fewer and wider striae and narrower interspaces.

Occurrence.—Lower Miocene: London basin, London, England (Bell, 1905).

valve; moderately large, margin lobed, straight or slightly curved, with a slight angle; posterior end more produced than the anterior, rounded to subtruncate; covered with a slight anterior compression of valves with a localized contraction posteriorly; umbo small, hard, prominent, and directed at an angle slightly elevated; external surface with a small, shallow, rounded depression in radial plane, the granular surface forming the posterior end; numerous very small, shallow, rounded, scattered throughout the length of the posterior dorsal margin, poorly defined on the left valve; chondrophore conspicuous, placed behind the umbo, directed toward the posterior end, almost external on the left valve; hinge with an obtuse right cardinal before the chondrophore, a corresponding left deep, triangular socket and a long left posterior lateral, formed by the compression of the margin; interior of the valve subnacreous, with obscure radii, the ventral margin finely crenulated and the margin at the posterior end compressed.

Description.— Size 7.5 mm.; alt., 2.5 mm.; thickness, 1.5 mm.

Remarks.— This species, which is small and common, is characterized by its outline and granulation. Variation in outline is apparent, some of the valves being slightly produced and rounded posteriorly and others decidedly produced and subtruncated. The right valves and a concomitant feature is the lower and broader

... ..
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Small, subcylindrical.
Length 3.0 mm.
Diameter 2.0 mm.

Stellaria (Stellaria) stellaria var.

Stellaria (Stellaria) stellaria var. *stellaria*
The form is small, subcylindrical, with a length of 3.0 mm.,
diam. 2.0 mm.

Description.-- Small, subcylindrical, with a length of 3.0 mm.,
diam. 2.0 mm. The body is covered with a fine, granular texture,
the granules being small, rounded, and slightly raised. The
beaks low, submedian, inconspicuous; rostrum small, short, slight-
ly curved, with a single feeble thread extending from the beaks to the lower
posterior extremity; hinge normal, fossette very small; interior
basal margin fringed by small projections corresponding to the
major radial sculpture. Length 4.0, height 2.5, diam. 2.0 mm."

Stellaria (Stellaria) stellaria var. *stellaria* is referred to *Stellaria*

The identification of the 21st century is not possible; the
same is true of (1) 2nd century where "Western civilization"
is carried from "Jews."

(1). 2nd. C., 2nd. C., 2nd. C., 2nd. C.

Summary. - 1st. C. 1st. C. 1st. C. 1st. C. 1st. C.
(1st. C. 1st. C.).

11.

12.

13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

"This little shells recalls Luzonia monostrea [Dall (1)] of the

(1). (2). (3). (4). (5). (6). (7). (8). (9). (10). (11). (12). (13). (14). (15). (16). (17). (18). (19). (20). (21). (22). (23). (24). (25). (26). (27). (28). (29). (30). (31). (32). (33). (34). (35). (36). (37). (38). (39). (40). (41). (42). (43). (44). (45). (46). (47). (48). (49). (50). (51). (52). (53). (54). (55). (56). (57). (58). (59). (60). (61). (62). (63). (64). (65). (66). (67). (68). (69). (70). (71). (72). (73). (74). (75). (76). (77). (78). (79). (80). (81). (82). (83). (84). (85). (86). (87). (88). (89). (90). (91). (92). (93). (94). (95). (96). (97). (98). (99). (100).

1991 and 1992. The results of the study are presented in the following table.

Table 1. - Summary of results: 1991 and 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002.

Corrall, 1914, p. 145.

Shell: Brachyballid.

Cardinal: Brachyballid.

Subcardinal: Brachyballid.

Section: Brachyballid.

Brachyballid (Brachyballid) Brachyballid.

Brachyballid (Brachyballid) Brachyballid, 1914, p. 145.

See Inst. 1914, Brachyballid, 1914, p. 145.

1914, p. 145, 1914, p. 145.

Description.- "Shell solid, nearly equilateral, subtrigonal,

moderately depressed, with a shallow, subtriangular, shallowly

and escutcheon subequal, moderately impressed; nuchal shell

small, and very shallowly impressed; the nuchal shell

extend down about one-fourth of the way to the basal margin mesial-

ly, and on the anterior slope are continuous, though the greater

part of the nuchal shell is very shallowly impressed; the

right cardinal nearly obliterated; laminae grooves deep; internal

margin of the nuchal shell. Brachyballid, 1914, p. 145.

(Brachyballid, 1914, p. 145).

See Brachyballid.- Brachyballid, 1914, p. 145.

slightly lower, more convex, the right side is more rounded and lower, with rounded posterior lateral margin, dorsal convexity transverse, slight posterior slope, with undulations on the dorsal surface, while the undulations on the sides are shorter, there being no more than one or two on the side, and a very prominent one on the right. The present form is readily distinguished from the associated Ammonites by its greater thickness, more elongate outline, greater convexity, more excavated posterior lateral margin, more irregular sides, the presence of concentric undulations on only the upper half or less of the anterior slope and the greater prominence of the right posterior cardinal.

Occurrence. - Localities: - Ammonites, Ammonites, Ammonites.

Genus: *Strophodonta* Zinn.

Strophodonta (Strophodonta) Strophodonta Zinn.

Strophodonta verticillata Zinn, 1871, Zool. Anz. 1, 1871.

1, p. 147, (plate 114), no. 147, and *Strophodonta*, 1871.

Strophodonta (Strophodonta) Strophodonta Zinn, 1871, Zool. Anz. 1, 1871.

1, p. 147, (plate 114), no. 147, and *Strophodonta*, 1871.

Strophodonta (Strophodonta) Strophodonta Zinn, 1871, Zool. Anz. 1, 1871.

1, p. 147, (plate 114), no. 147, and *Strophodonta*, 1871.

Strophodonta Zinn, 1871, Zool. Anz. 1, 1871.

1, p. 147, (plate 114), no. 147, and *Strophodonta*, 1871.

1, p. 147, (plate 114), no. 147, and *Strophodonta*, 1871.

Strophodonta Zinn, 1871, Zool. Anz. 1, 1871.

Shell small, compressed or slightly inflated, outline irregularly rounded-triangular, moderately inequilateral; posterior dorsal margin usually slightly longer than the anterior and slightly convex, usually with a small notch; anterior dorsal margin at a sharp or subrounded angle; anterior dorsal margin straight or slightly convex, usually with a small notch; ventrally arcuate base; umbones relatively high, apically acute and compressed, slightly opisthosyrate; escutcheon usually wider and more deeply impressed than the lunule; external surface of the

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Continuation of Schedule of Assets and Liabilities - 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620

1. The first group of people who are interested in the study of the history of the United States are the people who are interested in the history of the United States.

1. Unimaculata - characterized by a single, centrally located, dark spot on the ventral half of the shell.

2. Unimaculata - characterized by a single, centrally located, dark spot on the ventral half of the shell.

(1). 1871. 1871, p. 100-101, pl. 1, fig. 1.

Here the Unimaculata is characterized by a single, centrally located, dark spot on the ventral half of the shell. The low concentric undulations are obsolete.

(2). 1871, p. 100, pl. 1, fig. 2.

on the ventral half of the shell. Typical forms of the recent Unimaculata - characterized by a single, centrally located, dark spot on the ventral half of the shell.

(3). 1871, p. 100, pl. 1, fig. 3.

characterized by a single, centrally located, dark spot on the ventral half of the shell.

Unimaculata - characterized by a single, centrally located, dark spot on the ventral half of the shell. (1871, 1871).

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slightly curved and subparallel to the gently curved posterior dorsal margin; posterior lateral margin scarcely rounded to oblique, meeting the ventral margin more abruptly; umbones almost anteriorly, deeply impressed; external surface sculptured with nineteen to twenty ribs, the first few anterior ribs separated by wider interspaces; the succeeding ribs up to the posterior slope terraced on either side, slightly narrower, beyond the posterior slope the lower, terraced portion of the rib becoming obsolete, the ribs reduced in width and the last few anterior ribs suddenly wider and bear nodules that are more compressed at their ends or even spinose and directed toward the posterior margin; the surface of the valve with coarse, irregular concentric elevations also present on the terraces and in the interspaces; inner margin of the valve with very short, coarse crenulations.

Dimensions.—

1. The first group of people who are interested in the study of the history of the United States are the people who are interested in the history of the United States.

1. THE UNITED STATES OF AMERICA, 1776, 1777, 1778, 1779, 1780, 1781, 1782, 1783, 1784, 1785, 1786, 1787, 1788, 1789, 1790, 1791, 1792, 1793, 1794, 1795, 1796, 1797, 1798, 1799, 1800, 1801, 1802, 1803, 1804, 1805, 1806, 1807, 1808, 1809, 1810, 1811, 1812, 1813, 1814, 1815, 1816, 1817, 1818, 1819, 1820, 1821, 1822, 1823, 1824, 1825, 1826, 1827, 1828, 1829, 1830, 1831, 1832, 1833, 1834, 1835, 1836, 1837, 1838, 1839, 1840, 1841, 1842, 1843, 1844, 1845, 1846, 1847, 1848, 1849, 1850, 1851, 1852, 1853, 1854, 1855, 1856, 1857, 1858, 1859, 1860, 1861, 1862, 1863, 1864, 1865, 1866, 1867, 1868, 1869, 1870, 1871, 1872, 1873, 1874, 1875, 1876, 1877, 1878, 1879, 1880, 1881, 1882, 1883, 1884, 1885, 1886, 1887, 1888, 1889, 1890, 1891, 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900, 1901, 1902, 1903, 1904, 1905, 1906, 1907, 1908, 1909, 1910, 1911, 1912, 1913, 1914, 1915, 1916, 1917, 1918, 1919, 1920, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1928, 1929, 1930, 1931, 1932, 1933, 1934, 1935, 1936, 1937, 1938, 1939, 1940, 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 245

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1. The first group of people who are interested in the study of the history of the United States are the people who are interested in the history of the United States.

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Conclusion. -
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1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 84

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1. The first group of people who are interested in the results of the study are the researchers themselves. They want to know if the study was successful in achieving its objectives and if the results are consistent with their expectations.

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1. The following information is being furnished to you:
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The Santo Domingian specimens have in general less promi-

It should be stated that Dall's figure does not present the

1920-1921. - Upper [illegible]: [illegible], 1918,
1921, 1922; 1926, 1927, 1928, 1929. [illegible]:
[illegible], 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1928, 1929.

Chamaeleon ...
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Chamaeleon ...
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Chamaeleon ...
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... distinct radials with slightly excavated, narrower interspaces; these
are crossed by indistinct concentric threads, incremental lines,
...
... the shell shows small, s uarish nodulations which towards the ends
and dorsal margins become minutely spinulose; the right valve has
the hinge well developed, the anterior lateral large and strong,
the posterior obsolete; the posterior cardinal slightly grooved;
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Jagonia *...*

Description.— Shell small, compressed, white; surface, very
irregular and very polished; radial striations; apex low, acute;
lenticular, with a slight depression; surface marked with concentric
striations; hinge-line prominent; no prominent teeth, covered
by a ligament; the valve with a small, sharp, central
tooth and a small, sharp, lateral tooth; the
interior of the valve with a small, sharp, central tooth; the
interior of the valve with a small, sharp, lateral tooth, and
an anterior and posterior lateral, the posterior somewhat
obscured by the ligament; inner margin of the valve feebly crenu-
lated; the interior with obscure radial markings.

Measurements.— H. 11 mm.; D. 17 mm.; ...
Locality.— *J. ...* ...
It is characterized by the strong posterior, with the ...
and the concentric nodules being sharply chiseled. The radials
are ...
but the shell is larger and more compressed than the average
Jagonia.

Comparison.— *J. ...* ...

Genus *Schizotha* Schell.

Schizotha (*Schizotha*) *schizotha* Schell.

Schizotha (*Schizotha*) *schizotha* Schell, 1907, Journ. Paleont., vol. 1, no. 1, p. 1, pl. 1, fig. 1.

Description.— "Shell rather large, very thin, with the surface more or less smooth; inflated, with the anterior end larger, attenuated, posterior end more plump, ob-ovate, vertically elongate, with low, bluntly rounded, anterior, left lateral, and posterior margins; hinge small, triangular, with small, rounded, and slightly inflated, and cancellate results; hinge-margin narrow, hinge-teeth feeble, the laterals in the left valve obsolete or absent; scars lucinoid; diameter 13.5 mm."

"This species is not a *Schizotha* as it is not so inflated as to give it the appearance of a *Schizotha*." (Schell, 1907).

Type locality.— Texas, Austin.

Remarks.— *S. schizotha* is represented by a number of valves, the largest being more or less fragmentary. It is recognized by its somewhat elongate outline, feeble inflation and irregular surface.

YOUNG & RUBIN

(1917, 1918).

Urosalpinx (Urosalpinx) ...

Urosalpinx ..., in ... 1900, ...
...
Urosalpinx (Urosalpinx) ..., ... 1900, ...
...
... (= Urosalpinx (Urosalpinx) ...), 1900.

Description.-- ...
...
...
... (Sty., 1900).

Type locality.-- Bowden, Jamaica.

Shell small, thin, surface usually irregular, well inflated, width exceeding the height, slightly inequilateral, being more produced anteriorly; anterior dorsal margin short, direct or slightly concave, posterior dorsal margin longer, straight or slightly ...; ... narrow, moderately impressed; anterior dorsal area poorly defined, ... of the margin of the valve; external sculpture of numerous weak radials of irregular width, crossed by low, concentric lines of various width and irregularly spaced incrementals; on the dorsal area the radials absent or poorly developed; cardinal teeth

weak; on the left side the subventral lateral is both posterior and anterior processes distinct; other laterals small, present, but sometimes weak; lower part of the valve finely sculptured.

Dimensions.— Len., 14.5 mm.; alt., 10.5 mm.; breadth, 5.5 mm.

Remarks.— The muscular scar is preserved as a broad, well-developed ridge most of the valve are open; there are several however, irregularly spaced concentric lines of varying width and shape, usually smooth on the inside, but with small, as horizontal lines. The fine sculpture is usually present over the entire field, except in the dorsal region; they are of varying width and thickness. Both sets of sculpture are usually conspicuous enough to produce a reticulated effect. Some variation is noticeable with regard to convexity, but in general the characters are quite constant.

This is an abundant form and various growth stages are represented, the valve measured being one of the largest. The small size, slightly elongate outline and fine radial sculpture are characteristic features. The dorsal valve is very small, but the ventral, very distinct to somewhat, varying in size. The dorsal valve is the same as the ventral, but the ventral is much larger. The dorsal valve is, however, much more produced than pertenera and presents constant differences in being decidedly small, very distinct, and distinct, with some variations.

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Tertiary terrai ..

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REMARKS ON THE PROPOSED AMENDMENT.

Article 1. - The proposed amendment, which, in the opinion of the Committee, is of a technical nature, is proposed in the following terms: -

(i). . . (syn. excl.)

Article 2. - The proposed amendment, which, in the opinion of the Committee, is of a technical nature, is proposed in the following terms: -

(i). . . (syn. excl.)

Article 3. - The proposed amendment, which, in the opinion of the Committee, is of a technical nature, is proposed in the following terms: -

(i). . . (syn. excl.)

Small (10-12) cells.

Small (10-12) cells.

Small (10-12) cells.

Small (10-12) cells, 1967, *Trans. American Microscopical Soc.*,
vol. 86, no. 1, p. 115, pl. 10, fig. 10.

Small (10-12) cells, 1968, *Trans. American Microscopical Soc.*,
vol. 87, no. 1, p. 115, pl. 10, fig. 10. This species, though very similar, is more elongated, less
rounded, and more frequently occurs, though both are
present; small (10-12) cells; 1-2 cells together, round, with
thin, well-defined concentric lamellae, separated by wide interspaces and more
elongated near the dorsal surface, somewhat flattened, with
short, erect, unbranched, and of fine structure. Small
leaves, 10-12, round, and small; rounded; small
with 1-2 cells and the left dorsal teeth, and the
complete; 1-2 cells; the small (10-12) cells. 1967,
vol. 86, no. 1, p. 115, pl. 10, fig. 10.

"This species, though very similar, is more elongated, less
rounded, and more frequently occurs, though both are
present; small (10-12) cells; 1-2 cells together, round, with
thin, well-defined concentric lamellae, separated by wide interspaces and more
elongated near the dorsal surface, somewhat flattened, with
short, erect, unbranched, and of fine structure. Small
leaves, 10-12, round, and small; rounded; small
with 1-2 cells and the left dorsal teeth, and the
complete; 1-2 cells; the small (10-12) cells. 1967,
vol. 86, no. 1, p. 115, pl. 10, fig. 10.
1965.

side - [redacted], see the _____ and [redacted]
[redacted], the [redacted] [redacted] [redacted] [redacted]

figs. 4, 6, 1901.

1. The first group of people who are not in the labor force are those who are not in the labor force for any reason. This group includes people who are not in the labor force because they are not in the labor force for any reason. This group includes people who are not in the labor force because they are not in the labor force for any reason.

The first thing I saw when I stepped out of the car was a bright, sunny day. The temperature was just what I needed after a long drive. I took a deep breath and felt the sun on my face. It was a perfect start to the day.

The first thing I saw when I stepped out of the car was a bright, sunny day. The temperature was just what I needed after a long drive. I took a deep breath and felt the sun on my face. It was a perfect start to the day.

Reference.- The first thing I saw when I stepped out of the car was a bright, sunny day. The temperature was just what I needed after a long drive. I took a deep breath and felt the sun on my face. It was a perfect start to the day.

1911-12-10

Journal of Management Studies, 1987, 20(6), 617-627.

_____ (_____) _____, 19____, at _____,
County of _____, State of _____.

1. The first group of people who are interested in the study of the history of the United States are the people who are interested in the history of the United States.

1. The first part of the document is a list of names and titles, including "The Hon. Mr. Justice" and "The Hon. Mr. Justice".

higher umbones, as well as because of the notable decrease in

(1). *idem*, p. 1366, pl. 50, fig. 17.

(2). *idem*, p. 1366, pl. 50, fig. 17.

(3). *idem*, p. 1366, pl. 50, fig. 17.
3, 1856; non Linnaeus).

podagrinus. - In podagrinus it is difficult to find individuals of the same stage of growth are constant. The present variety is distinguished from podagrinus s. s. by its more recognizable, although the individual differences that separate them from podagrinus s. s. are not very pronounced, except for the disparity in inflation. The variety resembles more closely the forms discussed under podagrinus than the typical form, which is smaller and more inflated; but the difference is not very marked.

Polagrinus (Polagrinus) ...

Description.— Shell ... dorsal area sharply impressed; external sculpture of prominent, ... of the shell.

Measurements.— ... 9.5 mm.

Remarks.— ... is of this species. It is characterized by its gently curved ... sculpture; these features separate it from polagrinus and the ... (Pinnacoid), ...

(1). ...

but it is less inflated, less orbicular and has a shorter antero-

dorsal margin and finer sculpture.

There is a possibility that this is *Leptothorax* *guppyi*,
characterized by longitudinal sculpture; the ventral sculpture, however,
is transverse (Guppy, 1911, p. 10). Guppy's collection.

This species is found in the G. and L. zones, of the Amazon
basin, in Brazil, and has been reported previously in the
paleontology of tropical America.

References. - Leptothorax: Guppy, 1911, p. 10.

... ..

REMARKS (Cont.) REMARKS CONT. 1967, 1968, 1969. 1970-1971. 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645

"This little shell, represented only by a single valve, is apparently the precursor of L. submarginatus (Pilsbry), a species known from Middle Devonian water, which I, however, have not seen.

[1]. [unclear] [unclear] [unclear] [unclear] [unclear] [unclear];
[unclear] [unclear] [unclear] [unclear] [unclear] [unclear],
1899.

1871. In the collection of the British Museum, London.
1871. In the collection of the British Museum, London.
(1871, 1871).

Type locality.— Bowden, Jamaica.

Description.— The shell is small and globose. It is
of a light brown color, with a prominent, lamellose concentric sculpture.

Measurements.— Length: 1.5 mm, width: 1.0 mm.
(1871, 1871).

Tridacna (Tridacna) ...

Tridacna ... 1903, ...
52, fig. 11.

Tridacna (Tridacna) ... 1903, ...

Tridacna ... rather narrow lunule; posterior dorsal margin convexly arched,
sulci indicating resting stages; hinge-teeth small but distinct;
inner margins of the valves minutely crenulated. Alt. 6.5, lon.
...

"This little species is more like the recent West Indian
(Dall, 1903).

Tridacna ...

Tridacna ...

Summary. - (1) 1/1/1911: 1/1/1911, 1/1/1911
1/1/1911, 1/1/1911; 1/1/1911, 1/1/1911; 1/1/1911, 1/1/1911
1/1/1911, 1/1/1911, 1/1/1911, 1/1/1911.

[Faint, illegible text from the reverse side of the page]

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 84

3.3 mm.

strongly convex, more (irregularly) rounded, more (irregularly) rounded, and the (irregularly) rounded (irregularly) rounded, more (irregularly) rounded (irregularly) rounded, more (irregularly) rounded (irregularly) rounded.

18. radius (Dorsal) (1), more (irregularly) rounded (irregularly) rounded.

19. radius (Dorsal) (1), more (irregularly) rounded (irregularly) rounded, more (irregularly) rounded (irregularly) rounded, more (irregularly) rounded (irregularly) rounded, more (irregularly) rounded (irregularly) rounded.

more (irregularly) rounded (irregularly) rounded, more (irregularly) rounded (irregularly) rounded, slightly more convex, not as wide nor as compressed toward the margins, with a relatively long, sloping anterior dorsal margin, more (irregularly) rounded (irregularly) rounded, more (irregularly) rounded (irregularly) rounded, posterior margin, higher narrower and more strongly gyrate umbones, stronger sculpture and a decidedly heavier hinge.

Occurrence. - Form (Dorsal): more (irregularly) rounded (irregularly) rounded, more (irregularly) rounded (irregularly) rounded, more (irregularly) rounded (irregularly) rounded, more (irregularly) rounded (irregularly) rounded.

PAUCICOSTA (BACULIFERA) PAUCICOSTA CONRAD, 1902, p. 10, pl. 1, fig. 1.

Description.-- Shell consisting of two equal valves, low, sub-rectangular, slightly more inflated, weakly convex to the sides; umbones tending to be slightly higher; dorsal areas less well defined; radial sculpture weak or obsolete; concentric sculpture coarser, heavier, more regular and present over the entire disk.

Dimensions.-- H. 17.5 mm.; L. 11.5 mm.; thickness, 2.5 mm.

Variation.-- This variety is common, being a series of races, that are conspicuous because of the their prominent concentric sculpture. Variation affects the convexity and the outline, some of the specimens having a longer anterior dorsal margin and a proportionately greater width than the type. When compared with the typical pauperata, these valves form a rather compact group, the most obvious difference lying in the coarseness and prominence of the concentric sculpture of the variety. P. radians (Conrad) (1) is separated by its narrower umbones, longer anterior dorsal margin and stronger hinge.

(1). Discussed above.

margin and stronger hinge.

Locality.-- Type locality: Sweden, 1800, 1801, 1802.

Section Parvilocina Hall.

Section Parvilocina Hall.

Section Parvilocina (Parvilocina) Yagoubsky (1906).

Section Parvilocina Hall, 1872, Trans. Am. Microsc. Soc., vol. 15, p. 251.

Section Parvilocina (Parvilocina) Yagoubsky (1906), Trans. Am. Microsc. Soc., vol. 2, p. 100.

Section Parvilocina. - Small, oval, smooth, slightly flattened; head small, rounded; eyes large, deeply excavated; antennae small, slightly curved; legs and claws small; mouthparts small; body small, slightly flattened; head and eyes small; mouthparts small. - Yagoubsky (1906), Trans. Am. Microsc. Soc., vol. 2, p. 100.

Section Parvilocina. - Small, oval, smooth.

Section Parvilocina (Parvilocina) Yagoubsky (1906), Trans. Am. Microsc. Soc., vol. 2, p. 100.

(11). 100-150, 100-150, 100-150, 100-150, 100-150.

almost obsolete radial sculpture, much smaller lunule, and strong-ly, smooth, and almost perfectly smooth. - Yagoubsky (1906), Trans. Am. Microsc. Soc., vol. 2, p. 100.

(Dall, 1903).

... (faint text) ...

... (faint text) ...

fine concentric lamellae, slightly crenulated by the radials, often eroded; inner margin of the valve finely crenulated.

... (faint text) ...

characterized by the numerous weak radials and thin concentric lamellae. *... (faint text) ...* thinner and more widely spaced concentric lamellae.

... (faint text) ...

rate variety, but, apparently, they are nestlers, a bewildering array of variation is presented. All have in general the same type of sculpture, narrow, weak radials and thin concentric lam-

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PROTEIDUS (PACHYDORUS) LIMNEIDUS

DESCRIPTION.— Shell small, subcircular, slightly flattened; umbos small, rounded anteriorly, subequal, 1.0 mm.; height equalling large diameter, 1.5 mm.; dorsal surface, smooth, marked by numerous shallow, fine, concentric wrinkles and irregularly disposed concentric wrinkles and low lamellae; hinge with a single cardinal and the laterals, the posterior more elongate; spondylium small, rounded, 0.5 mm.; spondylium small, rounded.

MEASUREMENTS.— 100, 1.0 mm.; 110, 1.5 mm.; 120, 1.5 mm.

LOCALITY.— 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 210, 220, 230, 240, 250, 260, 270, 280, 290, 300, 310, 320, 330, 340, 350, 360, 370, 380, 390, 400, 410, 420, 430, 440, 450, 460, 470, 480, 490, 500, 510, 520, 530, 540, 550, 560, 570, 580, 590, 600, 610, 620, 630, 640, 650, 660, 670, 680, 690, 700, 710, 720, 730, 740, 750, 760, 770, 780, 790, 800, 810, 820, 830, 840, 850, 860, 870, 880, 890, 900, 910, 920, 930, 940, 950, 960, 970, 980, 990, 1000.

The shell varies from intermediate between proteidus and limneidus; from these varieties limneidus differs by its greater convexity, more tumid and high-umbo, slightly coarser sculpture, larger and deeper lunule.

REMARKS.— 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 210, 220, 230, 240, 250, 260, 270, 280, 290, 300, 310, 320, 330, 340, 350, 360, 370, 380, 390, 400, 410, 420, 430, 440, 450, 460, 470, 480, 490, 500, 510, 520, 530, 540, 550, 560, 570, 580, 590, 600, 610, 620, 630, 640, 650, 660, 670, 680, 690, 700, 710, 720, 730, 740, 750, 760, 770, 780, 790, 800, 810, 820, 830, 840, 850, 860, 870, 880, 890, 900, 910, 920, 930, 940, 950, 960, 970, 980, 990, 1000.

more in length than width of the shell. The shell is inflated and is oval, the valve being shorter than other specimens." (Dall, 1903).

Type locality.-- London, England.

Description.-- The small valves of this species are very similar to those of *P. proteoides*, but the escutcheon is not as deeply impressed as the lunule and the posterior dorsal area is more rounded than the anterior. The dorsal of inflation is subject to local variation. Differing in the radial or concentric sculpture, as well as in the shape of the valves with several small closely spaced *P. proteoides*, and with the *P. proteoides* being distinguished by small rounded posterior dorsal area, with rounded anterior dorsal area, and local rounded lunule, slightly heavier hinge and deeper and coarser internal crenulations; the typical *actinus* is, of course, readily distinguishable from the other species. *P. proteoides* is smaller, more rounded and more inflated than *P. proteoides*, besides having several peculiarities.

Measurements.--Dorsal length:

(Dall, 1903).

DESCRIPTION OF THE SPECIES.

Diagnosis.- Shell small, moderately, subglobular; aperture moderately wide, slightly elevated; surface moderately smooth; radial sculpture consisting of a radial line near the margin; radial sculpture consisting of distinct radial ribs, widely spaced on the outer portion of the shell and more numerous, separated by narrower, relatively shallow interspaces; concentric sculpture of prominent, regularly spaced ribs separated by interspaces of the same width, failing to override the radials on the most convex portion of the shell; base smooth; surface of the aperture smooth; coloration brownish white.

Dimensions.- H., 7 mm.; W., 7 mm.; D., 7 mm.

Remarks.- This characteristically sculptured Belluina is represented by a single specimen. Because of its distinct and more typical sculpture it is sharply differentiated from B. actinifera. The latter has a more irregularly sculptured surface and the radial sculpture is more numerous and more closely spaced.

(1). Type. Loc. 1, 1900. H., 7 mm., W., 7 mm., D., 7 mm. (2). Loc. 2, 1900. H., 7 mm., W., 7 mm., D., 7 mm.

1. General 1

(1) General 1

General 1

(1) General 1901.

General 1

Genus *Stenobothrus* Emerton.

Stenobothrus *Stenobothrus* Emerton.

Stenobothrus *Stenobothrus* Emerton, 1880, Trans. Am. Entom. Soc., vol. 1, p. 157 (from 1880-1881) as new.

Stenobothrus *Stenobothrus* Emerton, 1880, Trans. Am. Entom. Soc., vol. 1, p. 157 (from 1880-1881) as new.

Stenobothrus *Stenobothrus* Emerton, 1880, Trans. Am. Entom. Soc., vol. 1, p. 157 (from 1880-1881) as new.

Stenobothrus *Stenobothrus* Emerton, 1880, Trans. Am. Entom. Soc., vol. 1, p. 157 (from 1880-1881) as new.

Stenobothrus *Stenobothrus* Emerton, 1880, Trans. Am. Entom. Soc., vol. 1, p. 157 (from 1880-1881) as new.

Stenobothrus *Stenobothrus* Emerton, 1880, Trans. Am. Entom. Soc., vol. 1, p. 157 (from 1880-1881) as new.

Stenobothrus *Stenobothrus* Emerton, 1880, Trans. Am. Entom. Soc., vol. 1, p. 157 (from 1880-1881) as new.

Stenobothrus *Stenobothrus* Emerton, 1880, Trans. Am. Entom. Soc., vol. 1, p. 157 (from 1880-1881) as new.

Stenobothrus *Stenobothrus* Emerton, 1880, Trans. Am. Entom. Soc., vol. 1, p. 157 (from 1880-1881) as new.

Stenobothrus *Stenobothrus* Emerton, 1880, Trans. Am. Entom. Soc., vol. 1, p. 157 (from 1880-1881) as new.

anterior; more convexly rounded anteriorly; umbones tumid, relative-

ly prominent; lunule small, feebly impressed, almost or entirely

obscured by the umbones; anterior margin of the valve

obscurely bifid; both posterior and anterior laterals relatively

well developed; inner dorsal margin feebly serrated by the ver-

tebrae, the serrations being small, sharp, and numerous.

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cata, but has slightly finer sculpture.

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1891, March, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31.

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_____ (Name), _____ (Address), _____ (City), _____ (State), _____ (Zip).

1. *Arctostaphylos* (Thunberg), Hook. & Arndt, *Flora Antarctica*,
vol. 1, p. 114, 1841. (Thunberg, *Flora Capensis*, 1794,
p. 114, fig. 114.)

2. *Arctostaphylos* (Thunberg), Hook. & Arndt, *Flora Antarctica*,
vol. 1, p. 114, 1841. (Thunberg, *Flora Capensis*,
1794, p. 114, fig. 114.)

3. *Arctostaphylos* (Thunberg), Hook. & Arndt, *Flora Antarctica*,
vol. 1, p. 114, 1841. (Thunberg, *Flora Capensis*,
1794, p. 114, fig. 114.)

4. *Arctostaphylos* (Thunberg), Hook. & Arndt, *Flora Antarctica*,
vol. 1, p. 114, 1841. (Thunberg, *Flora Capensis*,
1794, p. 114, fig. 114.)

5. *Arctostaphylos* (Thunberg), Hook. & Arndt, *Flora Antarctica*,
vol. 1, p. 114, 1841. (Thunberg, *Flora Capensis*,
1794, p. 114, fig. 114.)

6. *Arctostaphylos* (Thunberg), Hook. & Arndt, *Flora Antarctica*,
vol. 1, p. 114, 1841. (Thunberg, *Flora Capensis*,
1794, p. 114, fig. 114.)

7. *Arctostaphylos* (Thunberg), Hook. & Arndt, *Flora Antarctica*,
vol. 1, p. 114, 1841. (Thunberg, *Flora Capensis*,
1794, p. 114, fig. 114.)

8. *Arctostaphylos* (Thunberg), Hook. & Arndt, *Flora Antarctica*,
vol. 1, p. 114, 1841. (Thunberg, *Flora Capensis*,
1794, p. 114, fig. 114.)

9. *Arctostaphylos* (Thunberg), Hook. & Arndt, *Flora Antarctica*,
vol. 1, p. 114, 1841. (Thunberg, *Flora Capensis*,
1794, p. 114, fig. 114.)

10. *Arctostaphylos* (Thunberg), Hook. & Arndt, *Flora Antarctica*,
vol. 1, p. 114, 1841. (Thunberg, *Flora Capensis*,
1794, p. 114, fig. 114.)

(1) Head, elongated.
 (2) Thorax, cylindrical.
 (3) Abdomen, cylindrical.
 (4) Legs, slender.

Measurements. - Head, small, cylindrical, moderately
 elongated; thorax, moderately elongated; abdomen, moderately
 elongated; legs, slender; antennae, moderately elongated; the left
 antenna, moderately elongated, the right antenna, moderately
 elongated; right cardinals subequal, moderately heavy, the posterior
 cardinal, smaller.

Measurements. - Head, small, cylindrical, moderately elongated; thorax, moderately elongated; abdomen, moderately elongated; legs, slender; antennae, moderately elongated; the left antenna, moderately elongated, the right antenna, moderately elongated; right cardinals subequal, moderately heavy, the posterior cardinal, smaller.

Measurements. - Head, small, cylindrical, moderately elongated; thorax, moderately elongated; abdomen, moderately elongated; legs, slender; antennae, moderately elongated; the left antenna, moderately elongated, the right antenna, moderately elongated; right cardinals subequal, moderately heavy, the posterior cardinal, smaller.

(1) Head, elongated; (2) Thorax, cylindrical; (3) Abdomen, cylindrical; (4) Legs, slender; (5) Antennae, moderately elongated; (6) Cardinals, subequal, moderately heavy, the posterior cardinal, smaller.

(1) Head, elongated; (2) Thorax, cylindrical; (3) Abdomen, cylindrical; (4) Legs, slender; (5) Antennae, moderately elongated; (6) Cardinals, subequal, moderately heavy, the posterior cardinal, smaller.

(1) Head, elongated; (2) Thorax, cylindrical; (3) Abdomen, cylindrical; (4) Legs, slender; (5) Antennae, moderately elongated; (6) Cardinals, subequal, moderately heavy, the posterior cardinal, smaller.

The Bowden form is distinguished from the coexistent members

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(Dall, 1960).

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_____.- 1841, 1842, 1843, 1844, 1845,

1846, 1847, 1848, 1849, 1850, 1851, 1852, 1853,

1854, 1855, 1856, 1857, 1858, 1859, 1860, 1861,

1862, 1863, 1864, 1865, 1866, 1867, 1868,

1869,

_____.- 1871, 1872, 1873, 1874, 1875, 1876,

1877, 1878, 1879, 1880, 1881, 1882, 1883, 1884,

(1). 1885, 1886, 1887, 1888, 1889, 1890, 1891, 1892,

1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900,

1901, 1902, 1903, 1904, 1905, 1906, 1907, 1908,

(2). 1909, 1910, 1911, 1912, 1913, 1914, 1915,

(as Misia subnebrata).

_____.- 1916, 1917, 1918, 1919, 1920, 1921,

(3). 1922, 1923, 1924, 1925, 1926, 1927, 1928,

(4). 1929, 1930, 1931, 1932, 1933, 1934, 1935,

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 39. The thirty-ninth group of the ...
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E., 1891
nearly circular outline and minutely punctate surface. It also
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References. -, 1891
(Dall, 1890, 1891)., 1891
(Dall, 1891).

locally abundant in the ...

shell, ...

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"..... hinge with a prominent tooth in the right valve,
articulating behind a smaller similar one in the left valve.
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Shell small, thin, elongated, subquadrate, decidedly inequi-
lateral, being much produced anteriorly; the long antero-dorsal

[illegible]

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CONFIDENTIAL - Security Matter:

(S, C).

The first object of the present study, therefore, is to determine the influence of the various factors on the production of the various types of music.

The second object of the present study is to determine the influence of the various factors on the production of the various types of music.

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1066).



gently arcuate base; median portion of the posterior margin
umbones high, prominent; exterior surface sculptured with
thirty-one to thirty-three strong radial ribs separated by
narrow, deeply channeled interspaces; five anterior ribs bear-
ing sometimes, sometimes, sometimes
times absent from the broader distal half of the ribs; the next
on the posterior side and overhanging the interspaces, the orna-
menting the ribs, the ribs, the ribs, the ribs
effect; toward the center of the shell the frill becoming narrow-
vertical in position; beyond the center the frill becoming wider
and separated from the smooth portion of the rib by a well defin-
ed, but slight, groove; on the ten posterior ribs the frill ceas-
position on the ribs, the nodules themselves becoming wider,
transversely swollen or globular and almost or entirely disconnect-
ed, these posterior ribs lower and the interspaces wider; fine

serrate.

The sculpturing is very elaborate and on portions of the shell
adults.

1. The first part of the document is a list of names and addresses, which are to be used for the purpose of the investigation. The names are to be written in the first column, and the addresses in the second column. The names are to be written in full, and the addresses are to be written in full, including the street, city, and state. The names are to be written in the first column, and the addresses in the second column. The names are to be written in full, and the addresses are to be written in full, including the street, city, and state.

10. 100, 100, 100, 100, 100.

17. 1940, 1941, 1942, 1943, 1944.

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17. *Journal of the American Medical Association*, 1912, 19, 1, 100.

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(Dell, 1900).

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1. The first group of people who are interested in the study of the history of the world are the historians. They are people who study the past and try to understand what happened and why it happened. They use many different sources of information, such as books, documents, and artifacts, to reconstruct the past. They also try to understand the people who lived in the past and how they thought and felt. Historians are interested in many different periods of history, from ancient times to the present. They also study different parts of the world, such as Europe, Asia, and Africa. Historians are important because they help us to understand the world we live in today. They tell us about the mistakes we have made in the past and how we can avoid them in the future. They also help us to understand the people we live with today and how they think and feel. Historians are people who are curious about the past and want to know more about it. They are people who are interested in the story of the world and want to tell it to others. They are people who are passionate about their work and want to make a difference in the world. Historians are people who are dedicated to their craft and want to be the best at what they do. They are people who are hardworking and determined to succeed. They are people who are creative and think outside the box. They are people who are brave and willing to take risks. They are people who are kind and caring to others. They are people who are honest and trustworthy. They are people who are confident and self-assured. They are people who are resilient and able to overcome adversity. They are people who are optimistic and hopeful for the future. They are people who are passionate about their work and want to make a difference in the world. Historians are people who are dedicated to their craft and want to be the best at what they do. They are people who are hardworking and determined to succeed. They are people who are creative and think outside the box. They are people who are brave and willing to take risks. They are people who are kind and caring to others. They are people who are honest and trustworthy. They are people who are confident and self-assured. They are people who are resilient and able to overcome adversity. They are people who are optimistic and hopeful for the future.

1890

1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

10. The following are the names of the persons who have been appointed to the various positions in the organization of the American Society of International Law:

Feb., 1903, 1904, 1905, 1906, 1907, 1908, 1909, 1910, 1911, 1912, 1913, 1914, 1915, 1916, 1917, 1918, 1919, 1920, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1928, 1929, 1930, 1931, 1932, 1933, 1934, 1935, 1936, 1937, 1938, 1939, 1940, 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584,

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1. The first group of people who are interested in the study of the history of the United States are the people who are interested in the history of the United States.

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The first of these is the fact that the number of cases of disease has been increasing steadily since 1900. This is due to a number of causes, including the fact that the population of the country has been increasing rapidly, and the fact that the standard of living has been improving. The second cause is the fact that the climate of the country has been becoming more temperate, and the third is the fact that the people have been becoming more susceptible to disease.

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Conclusion - The number of cases of disease has been increasing steadily since 1900. This is due to a number of causes, including the fact that the population of the country has been increasing rapidly, and the fact that the standard of living has been improving.

1. The first group of people who are interested in the study of the history of the United States are the people who are interested in the history of the United States.

1885 1886 1887 1888 1889 1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940 1941 1942 1943 1944 1945 1946 1947 1948 1949 1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063 2064 2065 2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079 2080 2081 2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095 2096 2097 2098 2099 2100 2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111 2112 2113 2114 2115 2116 2117 2118 2119 2120 2121 2122 2123 2124 2125 2126 2127 2128 2129 2130 2131 2132 2133 2134 2135 2136 2137 2138 2139 2140 2141 2142 2143 2144 2145 2146 2147 2148 2149 2150 2151 2152 2153 2154 2155 2156 2157 2158 2159 2160 2161 2162 2163 2164 2165 2166 2167 2168 2169 2170 2171 2172 2173 2174 2175 2176 2177 2178 2179 2180 2181 2182 2183 2184 2185 2186 2187 2188 2189 2190 2191 2192 2193 2194 2195 2196 2197 2198 2199 2200 2201 2202 2203 2204 2205 2206 2207 2208 2209 2210 2211 2212 2213 2214 2215 2216 2217 2218 2219 2220 2221 2222 2223 2224 2225 2226 2227 2228 2229 2230 2231 2232 2233 2234 2235 2236 2237 2238 2239 2240 2241 2242 2243 2244 2245 2246 2247 2248 2249 2250 2251 2252 2253 2254 2255 2256 2257 2258 2259 2260 2261 2262 2263 2264 2265 2266 2267 2268 2269 2270 2271 2272 2273 2274 2275 2276 2277 2278 2279 2280 2281 2282 2283 2284 2285 2286 2287 2288 2289 2290 2291 2292 2293 22

[Faint, illegible text from bleed-through]

1. The first part of the document, which is the most important, is the introduction. It contains the main ideas of the author and the purpose of the study. The introduction is written in a clear and concise manner, and it is easy to read. It is written in a simple and straightforward manner, and it is easy to read. It is written in a simple and straightforward manner, and it is easy to read.

2. The second part of the document is the main body. It contains the results of the study and the conclusions. The main body is written in a clear and concise manner, and it is easy to read. It is written in a simple and straightforward manner, and it is easy to read.

3. The third part of the document is the conclusion. It contains the final thoughts of the author and the results of the study. The conclusion is written in a clear and concise manner, and it is easy to read. It is written in a simple and straightforward manner, and it is easy to read.

4. The fourth part of the document is the bibliography. It contains the references used in the study. The bibliography is written in a clear and concise manner, and it is easy to read. It is written in a simple and straightforward manner, and it is easy to read.

5. The fifth part of the document is the appendix. It contains the additional information that is not included in the main body. The appendix is written in a clear and concise manner, and it is easy to read. It is written in a simple and straightforward manner, and it is easy to read.

6. The sixth part of the document is the index. It contains the list of topics and the page numbers where they are discussed. The index is written in a clear and concise manner, and it is easy to read. It is written in a simple and straightforward manner, and it is easy to read.

7. The seventh part of the document is the glossary. It contains the definitions of the terms used in the study. The glossary is written in a clear and concise manner, and it is easy to read. It is written in a simple and straightforward manner, and it is easy to read.

8. The eighth part of the document is the list of figures. It contains the list of figures and the page numbers where they are discussed. The list of figures is written in a clear and concise manner, and it is easy to read. It is written in a simple and straightforward manner, and it is easy to read.

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12.
15, p. 51,

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1. The first part of the document is a list of names and titles, including "The Hon. Mr. Justice" and "The Hon. Mr. Justice".

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interspaces between them shallower and narrower; in addition, it
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undescribed Trigonocardia which is rather closely related; it
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area less sharply impressed, the ribs more numerous (eleven or
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the interspaces narrower and shallower.



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6, pl. 48, fig. 5.

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second or third channel rises a row of small, stout, very cadu-

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THEORY OF THE EARTH.

The theory of the earth is a branch of geology which deals with the origin and development of the earth and its various parts. It is a science which seeks to explain the causes of the various geological phenomena which we observe in nature. The theory of the earth is a very old science, and it has been the subject of much speculation and controversy. In the early days of the world, men believed that the earth was created by the gods, and that it was the work of the gods to create the world. But as time went on, men began to think for themselves, and they began to ask questions about the origin of the earth. They began to wonder how the earth came to be, and what caused the various geological phenomena which they observed. This led to the development of the theory of the earth, which is a science which seeks to explain the causes of the various geological phenomena which we observe in nature.

THEORY OF THE EARTH - THEORY OF THE EARTH : THEORY OF THE EARTH, THEORY OF THE EARTH, THEORY OF THE EARTH.

Genus *ξέρος* (Xeros)

Family *Valvulidae*

Subfamily *Valvulinae*

Genus.- *ξέρος* (Xeros); *Valva*, *Valvula*.

Shell small, globose, low, subcylindrical, somewhat flattened, with the sides slightly convex; surface smooth, shining, with a few scattered small pits; color light brown, with a few darker spots; edge of the hinge plate below the ligament thickened; hinge strong, broad, with a few small teeth; the sides of the valve are slightly curved, the anterior end, compressed and arched toward the posterior end, for the reception of the prominent middle left cardinal, the anterior cardinal heavy, ventral in position; left valve with a prominent, obtuse, middle cardinal, joined above to the smaller anterior cardinal, below which the anterior socket is situated; surface of the valve smooth, shining, with a few scattered small pits; color light brown, with a few darker spots; subangular; inner ventral margin of the valve flattened; with a few tangential grooves.

Loc.- *Thessalonica* (Thessalonika)

On the coast of the Gulf of Salonica, near the city of Thessalonica.

Remarks.- The valve is small, subcylindrical, with a few scattered small pits.

Measurements.- The length is about 1.5 mm., the width about 1.0 mm.

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(Dall, 1903).

1. *Journal of the American Medical Association*, 1997; 277: 1039-1043.

1. The first group of people who are interested in the results of the study are the researchers themselves. They want to know if the study was successful in achieving its goals and if the results are consistent with their expectations.

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Conclusion - On 12 March:
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1. The first part of the document is a title page. It contains the title of the document, the author's name, and the date of the document. The title is "The First Part of the Document". The author's name is "John Doe". The date is "1/1/2020".

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1. *Chamaecrista* (L.) Greene

Chamaecrista (L.) Greene, *Proc. Acad. Nat. Sci. Phila.* 1876, p. 103. - *Chamaecrista* (L.) Greene, *Proc. Acad. Nat. Sci. Phila.* 1876, p. 103.

Chamaecrista (L.) Greene: *Chamaecrista* (L.) Greene, *Proc. Acad. Nat. Sci. Phila.* 1876, p. 103.

Chamaecrista (L.) Greene: *Chamaecrista* (L.) Greene, *Proc. Acad. Nat. Sci. Phila.* 1876, p. 103. Toulia 1908: A

Chamaecrista (L.) Greene: *Chamaecrista* (L.) Greene, *Proc. Acad. Nat. Sci. Phila.* 1876, p. 103. *Chamaecrista* (L.) Greene, *Proc. Acad. Nat. Sci. Phila.* 1876, p. 103. *Chamaecrista* (L.) Greene, *Proc. Acad. Nat. Sci. Phila.* 1876, p. 103.

Myrmica *Myrmica* *Myrmica*.
written (unpublished) note.

(*Myrmica* *Myrmica* *Myrmica*).

Myrmica *Myrmica* *Myrmica* *Myrmica*, 1875, *Ann. Ent. Soc. Am.*, vol. 1, no. 1, p. 1.

Myrmica, vol. 1, no. 1, p. 1, 1875.

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Myrmica, 1875, *Ann. Ent. Soc. Am.*, vol. 1, no. 1, p. 1.

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Veneridae. Except for the usual variation in the width of the
concentric rugae and an occasional irregularity in their arrange-
ment, the characters are quite uniform. It is characterized by
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tric sculpture.

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22, fig. 2, 1911.

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trunc ted; lunule crossed by unequally developed lamellar contin-

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Figure 1. Schematic representation of the experimental design. The subjects were divided into two groups: the control group and the experimental group. The control group was divided into two subgroups: the control group and the experimental group. The experimental group was divided into two subgroups: the control group and the experimental group. The control group was divided into two subgroups: the control group and the experimental group. The experimental group was divided into two subgroups: the control group and the experimental group.

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1. The first group of people who are interested in the study of the history of the United States are the people who are interested in the history of the United States.

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1. The first group of people who are not in the labor force are those who are not in the labor force for any reason. This group includes people who are not in the labor force because they are not in the labor force for any reason. This group includes people who are not in the labor force because they are not in the labor force for any reason.

Woodward, 1831, p. 174, pl. 1.

Shell, p. 111, pl. 1.

Conch. Meric. (Dionaea) Woodward.

Dionaea Meric. (Dionaea).

Section Meric. Shell.

Meric. (Dionaea) Woodward.

Pellia (Meric.) Woodward, 1831, p. 174, pl. 1. Woodward, 1831, p. 174, pl. 1. Woodward, 1831, p. 174, pl. 1. Woodward, 1831, p. 174, pl. 1.

Description.-- "Shell small, rounded, slightly flattened; general imbrication coarse, and partly regular. Shell smooth, posterior end, the anterior end small; aperture, small, ventral, narrow; heavily beveled; disk covered with a fine, granular texture, and is covered by the, elongated, prominent sharp lamellae; hinge normal, teeth large and strong for the size of the shell; siphon also large, and the siphon is anterior adductor, and dorsal adductor; more raised above the level of the posterior adductor. Lon. 7, alt. 5.5, diam. 5 mm."

"This very small, and very distinct from any of the other local or any American species." (Woodward, 1831).

Type Locality.-- Garden, America.

CHRYSA (MUSCIVOR) CHRYSAEAE. CHRYSAEAE.

Description.— Body small, somewhat elongated, slightly flattened; head, thorax and abdomen, slightly flattened; legs and feet, slightly flattened; wings, slightly flattened; antennae, slightly flattened; head, thorax and abdomen, slightly flattened; legs and feet, slightly flattened; wings, slightly flattened; antennae, slightly flattened.

Dimensions.— Length, 5 mm.; width, 3 mm.; height, 3 mm.

Remarks.— The single left eye is small and is situated in a deep groove of the species; it is decidedly more inflated, less inequilateral, less elongated, more rounded and more prominent, with a more rounded and more prominent eye.

See also.— Lower Muscivora: *Chrysa* 1848, *Chrysa*, *Chrysa*.

exteriorly, the (100) and (010) faces, the (100) face being
the most prominent. The (100) face is the most prominent
face, and the (010) face is the next most prominent. The
faces are all of the same size.

Occurrence.—In the form of small, white, rhombohedral
crystals, 1000.

Type locality. - London, England.

Remarks. - This species has not been recorded from any other locality. It is highly typical of the species and the only one that has not been recorded from any other locality. It is highly typical of the species and the only one that has not been recorded from any other locality.

Description. - Length: 1.5 mm. (1911, 1912).

Chamaea *hypoleuca* *Woods*.

Chamaea *hypoleuca* *(Woods) Dall*.

Chamaea (*hypoleuca*) *Dall*, 1900, *Trans. Amer. Mus. Nat. Hist.*, vol. 2, pt. 2, p. 1234.

Specimens of *Chamaea hypoleuca*, collected at the same section, are present in the National Museum collection and also in the collection of *Dall*. The shell is moderately convex and moderately inequilateral; the ventral-ventral margin convex; the sculpture consisting of fine, concentric, distinct, regular concentric striae that become slightly imbricate ventrally.

Remarks.-- *Chamaea hypoleuca*: *Chamaea hypoleuca*, *Woods* (Dall, 1900).

George Brewster, 1904.

Trilobites (Trilobites) Brewster, 1904.

Trilobites (Trilobites) Brewster, 1904, Trans. Amer. Mus. Nat. Hist., vol. 7, pt. 2, p. 122, pl. 12, fig. 12.

Description.— "Shell small, inflated, sessile, very inequilateral, bilobed; anterior broad, declivous, anterior and rounded, apex broadly truncate; posterior very short with the extremely slowly pointed; base 12, dorsal apophysis 12, with a prominent line 12; side 12, dorsal line extending nearly to the anterior margin, dorsal apophysis 12. 12, alt. 1, diam. 12."

"This form is not yet identified as T. Brewsteri 1904, but the latter is not identified as T. Brewsteri 1904. T. Brewsteri is not yet identified as T. Brewsteri 1904, but the latter show incremental sculpture."

Size and locality.— 12, 12, 12.

Remarks.— T. Brewsteri is not identified as T. Brewsteri 1904.

inequilateral outline, convexity and slight posterior constriction. The surface may be sculptured with fine concentric striae.

11. *Theraps. An. 1875. Dec., 1875, 1876, 1877, 1878, 1879.*

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([unclear], [unclear]).

(25. 387)



1911 Notrella indica Coll., 1911, Trans. Amer. Soc. Ent.
1911, Philadelphia, vol. 2, no. 2, pp. 161-162, p.
46, fig. 5.

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Figure 30. -,,

(Dall, 1930).

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1901 (1900) 2011 111.

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11. 7.

Declar. film. - "Still with, 15074, 15075, 15076, 15077".

121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 841. 842. 843. 844. 845. 846. 847. 848. 849. 850. 851. 852. 853. 854. 855. 856. 857. 858. 859. 860. 861. 862. 863. 864. 865. 866. 867. 868. 869. 870. 871. 872. 873. 874. 875. 876. 877. 878. 879. 880. 881. 882. 883. 884. 885. 886. 887. 888. 889. 890. 891. 892. 893. 894. 895. 896. 897. 898. 899. 900. 901. 902. 903. 904. 905. 906. 907. 908. 909. 910. 911. 912. 913. 914. 915. 916. 917. 918. 919. 920. 921. 922. 923. 924. 925. 926. 927. 928. 929. 930. 931. 932. 933. 934. 935. 936. 937. 938. 939.

• • • • •

...time." (Dall, 1904).

Size Locality. - ...

Remarks. - ...
ate outline and relatively sharp posterior carina, the shell be-
ing slightly depressed to front or ...
the valves ... is ...
Dimensions: length, ...; ...; ...
... (1), ...

(1). loc. ... 1904, ... 1900.

beds; it is slightly larger, more flexed posteriorly and with
...
...

(2). loc. ... 1904, ... 1900.

...
...

Occurrence. - ...
(Dall, 1904).

1911 (1912) 1913.

Description. - Shell oval, - convex, slightly flattened, with a slight depression at the apex; surface smooth, slightly granular, with a few small pits; color white, with a few small brown spots; aperture slightly notched at the anterior end; umbilicus slightly raised at the posterior end; height 4.5 mm., width 7.5 mm., thickness 1.7 mm. (approximate measurements of the specimen).

Dimensions. - Length, 7.5 mm.; alt., 4.5 mm.; semidiam., 1.7 mm.

Remarks. - This species is represented by a single left valve. It appears to have been found in the same locality as the other species. The right valve is missing, and the specimen is therefore incomplete. The specimen is a small, white, oval shell with a slightly notched aperture and a slightly raised umbilicus. It is a very common species in the collection.

Distribution. - Found at: [illegible], [illegible], [illegible].

22214 (AMERICAN) VANDERBILT.

22214 (AMERICAN) VANDERBILT. 1907, Texas. Found from [unclear]
[unclear], [unclear], [unclear], [unclear], [unclear], [unclear],
[unclear].

Description.- Small, [unclear], [unclear]; [unclear]
low, [unclear] [unclear] [unclear] [unclear], [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear]
[unclear] [unclear], [unclear] [unclear] [unclear], [unclear] [unclear] [unclear]
[unclear]; [unclear] [unclear] [unclear] [unclear] [unclear] [unclear], [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear]; [unclear] [unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear]
[unclear], which is [unclear] [unclear] [unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear]
mm."

"The [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear]
the high dorsal profile behind the beaks." (Dall, 1907).

22215 (AMERICAN) VANDERBILT. 1907, Texas.

Description.- On [unclear] [unclear] [unclear] [unclear] [unclear] [unclear]
raised on the dorsal half of the radial line near the posterior
end along which a carina is usually developed. When the shell

... ..,,
... ..

... ... - Upper,,
... ..; Lower,,
(Dell, 1900).

There is a small amount of the same material in the
 collection of the U. S. National Museum, and it is
 also in the collection of the U. S. National Academy of Sciences.

Source.—The U. S. National Academy of Sciences (1911, 1912).
 The U. S. National Museum (1911, 1912).
 The U. S. National Academy of Sciences (1911, 1912).

_____ , _____ , _____ , _____ , _____ , _____ .

1911-1912 111-1911 111-1911, 111-1911, 111-1911.
111-1911, 111-1911, 111-1911.

Revised _____ 19____, _____, _____.

1911-1912 (1911-1912) 1911, 1912, 1913, 1914, 1915, 1916, 1917, 1918, 1919, 1920, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1928, 1929, 1930, 1931, 1932, 1933, 1934, 1935, 1936, 1937, 1938, 1939, 1940, 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 258

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1. The first group of people who are interested in the results of the study are the researchers themselves. They want to know if the study was successful in achieving its goals and if the results are consistent with their expectations.



10. *ibid.* 1914, vol. 1, p. 111. *ibid.* 1915, vol. 2, p. 111.

11. *ibid.* 1915, vol. 2, p. 111.

12. *ibid.* 1915, vol. 2, p. 111.

REFERENCES.— *Upper Miocene*: *ibid.* 1915, vol. 2, p. 111;
Lower Miocene: *ibid.* 1915, vol. 2, p. 111;
Pliocene: *ibid.* 1915, vol. 2, p. 111; *ibid.* 1915, vol. 2, p. 111;
Quaternary: *ibid.* 1915, vol. 2, p. 111. *ibid.* 1915, vol. 2, p. 111;
ibid. 1915, vol. 2, p. 111. *ibid.* 1915, vol. 2, p. 111.

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TRACTA.- TRACTA OF THE TRACTA OF THE TRACTA,
TRACTA. TRACTA OF THE TRACTA OF THE TRACTA,
(TRACTA, TRACTA).

THE SHELL

Description.— Shell small, oval, 11-12 mm., 6-7 mm. high, 4-5 mm. wide. Surface smooth, white, with a faint yellowish tint. The aperture is at the anterior end, and is slightly elevated. The umbilicus is very shallow, and the shell is very thin. The sculpture is very fine, consisting of numerous small, closely-set, rounded nodules, which are more prominent on the sides than on the top. The color is a pale yellowish white, and the shell is very translucent. The surface is very smooth, and the shell is very thin.

Dimensions.— Lat., 11 mm.; Alt., 6 mm.; Umb., 4 mm.

Locality.— I. Sordani (1870) (Sordani, 1870). It is a small, oval, white, smooth, translucent shell, with a very fine, rounded nodular sculpture. When the shell is translucent the radials are very obscure.

References.— Lower Sordani: Sordani, 1870, p. 10.

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[illegible]

Staphylinus (22) (17) (11).

Staphylinus (17) (11) (11).

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Staphylinus (17) (11) (11), *Staphylinus* (17) (11) (11),
p. 425.

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p. 425.

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p. 425.

Staphylinus (17) (11) (11), *Staphylinus* (17) (11) (11),
p. 425.

22. (Quinn, 1971).

THE LOCAL LITERARY SOCIETY

[illegible]

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[Faint handwritten notes at the bottom of the page]

Corbicula heterotoma (Pilsbry, 1901, Trans. Am. Paleont., vol. 1, no. 1, p. 10, pl. 1, fig. 1).
Pilsbry, 1901, Trans. Am. Paleont., vol. 1, no. 1, p. 10.

Description.— Shell biconvex, small, thin, with a slight depression in the middle of the dorsal surface, less prominent, and the posterior part of the shell more produced. Diam. 0.5, alt. (Pilsbry, 1901).

Type locality.— London, England.

Left valve of medium size, high, suboval, slightly sub-
equilateral to suboblong, low lateral, slightly more produced
posteriorly; dorsal margins subequal, both concave, rounded anteriorly
slightly, posteriorly truncated, color, base white, opaque;
obscure fold, high, strong, narrow, and somewhat to lateral
of middle, subcentral in position; near the anterior margin
an obscure saring, followed posteriorly by a strong, slightly
shell, rounded, the apex between the two slightly or
slightly depressed; surface sculptured with concentric rugae of
medium width; left valve small, elongate subovate, well-inflated,
subcircular, suboblong, rounded anteriorly, produced posteriorly;
subequal, suboval, slightly convex, posteriorly
slightly longer and straight; anteriorly, suboval, slightly
placed before the median vertical; posterior carina low, obscure;
sculpture of obscure, fine concentric rugae, suppressed over much
or all of the surface; the dorsal surface is slightly more produced
than the posterior, the dorsal surface is slightly more produced

11). 200. 300., 1. 517, 141.

51. 102. 10., n. 101, 101.

1881, 1882. [Faint text, possibly "Faint text (Gabb, 1881)"]
(Gabb, 1881).

Tridacna (Tridacna) lavelleana.

Tridacna (Tridacna) lavelleana n. sp.

? Tridacna lavelleana n. sp., 1911, Ann. Mag. Nat. Hist., vol. 1, p. 1, fig. 12 (2 views, non lavelleana, n. sp.).

Tridacna (Tridacna) lavelleana n. sp., 1911, Ann. Mag. Nat. Hist., vol. 1, p. 1, fig. 12 (2 views, non lavelleana, n. sp.).

? Tridacna lavelleana n. sp., 1911, Ann. Mag. Nat. Hist., vol. 1, p. 1, fig. 12 (2 views, non lavelleana, n. sp.).

Description.— "Shell much like the species provided Tridacna lavelleana n. sp. in general form, but slightly longer and with less excavation than the common, etc. and also, however, is quite different, being of very moderate, small, size, with, above all, the lateral ribs caused by the, etc. sharp radial sculpture, which at once distinguished it from all of the allied species. Both valves are similarly sculptured, the sculpture becoming obsolete on the backs. Lon. 4.5, alt. 3.5, diam. 2.3 mm. The lateral ribs are small (1.5 mm)." (1911).

"As the ribs are not overrun by the radial sculpture, the effect is not reticulate. Tridacna lavelleana Orbigny, of the recent Tridacna lavelleana n. sp. is not reticulate, etc. (1911)." (1911).

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... ..
(1). From. de.
(2).

... ..
with the base more broadly
margin straighter and with a steeper slope, the posterior slope
narrower and the
the
while the

... ..
(1).
(2).

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were elevated. The
series is
... ..
prior slope.

Summary. -
... ..
... ..

Corbula *viridis* *Gmel.*

Corbula (*Corbula*) *viridis* *Gmel.*

Corbula viridis Gmel., *Marit. Mus. Zool. Mus. Götting.*,
vol. 1, p. 17, pl. 1, fig. 1.

Corbula viridis (Gmel.) Webb, 1872, *Proc. Zool. Acclim. Soc. London*,
vol. 1, p. 17, pl. 1, fig. 1.

Corbula viridis (Gmel.) Webb, 1872, *Proc. Zool. Acclim. Soc. London*,
vol. 1, p. 17.

Corbula viridis Gmel., *Marit. Mus. Zool. Mus. Götting.*,
vol. 1, p. 17.

Corbula viridis Gmel., *Marit. Mus. Zool. Mus. Götting.*,
vol. 1, p. 17.

Corbula (*Corbula*) *viridis* Gmel., 1858, *Marit. Mus. Zool. Mus. Götting.*,
vol. 1, p. 17.

Corbula viridis Gmel., *Marit. Mus. Zool. Mus. Götting.*,
vol. 1, p. 17.

Corbula.-- "Shell large, somewhat oblong, rounded
anteriorly, produced posteriorly into a long beak; surface
irregular, rather smooth, concentric ribs; hinge with
single prominent tooth and a deep orbicular pit in front of it."
(Gmel., 1858).

Type locality.-- Götting.

Shell large, oval, moderately inflated, alveolate, imbricated; left valve slightly smaller; rounded anteriorly, narrowed in the middle portion (about 1/3 of the way) to the narrow posterior end; base weakly convex, finely granular-reticulate; umbilical cord, placed anterior to the dorsal margin; dorsal margin, from base, symmetrical, lower of the left valve; posterior dorsal edge, more pronouncedly raised, rounded over the posterior margin, the anterior lower margin and flattened; external surface sculptured with coarse concentric rugae, suppressed before the posterior carina is reached, with fine concentric striae immediately between the ridge and submargin which the posterior process of the valve is joined to; dorsal sculpture of this, however, without radial striae between the ridge, the radial sculpture of the posterior slope; the cardinal lobe is the most prominent strong.

Dimensions.-- Length, 17.5 mm.; alt., 11 mm.; width, 4.8 mm.

Remarks.-- This species, which well represents, is common in the North Pacific localities mentioned, on the west of which each variety of the genus Conus is found. The dorsal valve has the following dimensions: length, 20 mm.; alt., 15 mm.; width, 7 mm.

Dall has described several closely related species,-- the Conus gibbatus (Dall, 1901) and Conus gibbatus (Dall, 1901).

- (1). Loc. 201., no. 201-202, pl. 20, figs. 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846,

Reference.- Boyer-Hillebrand: Santa Barbara Coast, 1877; Tenny, 1878, 1879; Gill, 1878; Santa Barbara, Santa ^{-a-}Barbara, 1878; Gill, 1878; Santa Barbara: Santa Barbara, 1878; Santa Barbara (Gill, 1878); Santa Barbara: Santa Barbara, 1878; Santa Barbara (Gill, 1878; Gill, 1878).

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[Faint, mostly illegible text in the middle section, possibly a description or introduction.]

"The difference between the recent and the Pleistocene
 [illegible] and [illegible], [illegible] [illegible] [illegible] [illegible]
 [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
 distinctive characters above mentioned seem contrast, [illegible]
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 [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible].

One locality: Borden, Jamaica.

[Faint, mostly illegible text at the bottom of the page, possibly a conclusion or references.]

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Genus Trilobites partim

Trilobites partim index

Trilobites partim index, Guppy and Dall, 1896, Ann. N. S. W. Mus., vol. 19, pp. 257-258.

Description.— "Almost globular, anterior end finely closely beaded, posterior end subequal, slightly beaded, the lateral surface finely beaded; surface generally smooth, slightly beaded, the surface, however, is covered with small and reflected the dorsal plates, especially the dorsal plate." (Guppy and Dall, 1896).

"This very similar little trilobite is extremely common, rendering it advisable to await more material before describing it. It has features with the Trilobites partim index partim, but it is not a Trilobites partim index partim index." (Guppy and Dall, 1896).

Remarks.— No further material is available at present. Guppy's Trilobites partim index, which was a Trilobites partim index.

Remarks.— Guppy, 1896: Ann. N. S. W. Mus., vol. 19, pp. 257-258 (Guppy and Dall, 1896).

McCully: Irradiation.

Some possible lines.

Some possible lines.

McCully: Irradiation Bell, 1898, Trans. Amer. Mus. Nat. Hist.,
Chicago, vol. 1, no. 1, p. 111-112, pl. 1, fig. 1.

Correction. - The specimen described in the preceding article
was certainly one of the best of the McCully, and was
very well preserved. The specimen described in the preceding article, in-
regularly broken strip of the shelly matter belonging to the
missing tube. The thin posterior border of the valve is not in-
tact, though enough remains to show the character of the sculp-
ture. The sculpture of the anterior part of the valve is com-
posed of small, four-sided lozenges, separated by sharp, narrow,
arcuate grooves in such a way as to produce the effect of a part-
ial, or total, division of the valve. This sculpture is located
on the anterior border of the valve, but the rest of the valve is
smooth. The lower longitudinal surface is smooth. The upper
reflection is heavy and radially striate; the apophysis seems to
have been obsolete and its remains appressed to the internal arch
of the valve. The whole is rather pale and white, and the an-
tero-posterior length of the fragment is six and a half millimeters.

"The very distinct sculpture of this shell instantly dis-

stimulated it from any other source." (Call, 1900).

Howe.-- Howe, Jamaica.

Howe.-- This was collected on the same day as the collection of Howe.

Howe.-- This is the same as the collection of Howe, Jamaica. (Call, 1900).

Dall: Teredo.

Genus: Teredo.

Species: Teredo.

Dall (1) has assigned them to T. incrassata (1888) (2), or Teredo to the genus Teredo, are present in the collections. Dall (1)

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- (1). Trans. Amer. Ent. Soc., Philadelphia, vol. 7, pt. 1, p. 17, 1888; pt. 2, p. 170, 1888 (second list).
- (2). Bull. U.S. Fish. Com., vol. 11, p. 17, 1888.
(as Yuphus incrassata)
-

Species: Teredo from the collection.

Teredo.-- Lower Tertiary: London, etc., etc., etc.

1916.

William Phillips, formerly of the United States Geological Survey, received ore-collegiate training at Albright Preparatory School, Myerstown, Pennsylvania. In 1900 he entered Albright College, from which institution he received the degree of Bachelor of Arts in 1904. He served as a member of the Phi Kappa Phi Honor Society. He has been engaged in graduate work in the Department of Geology of the University of Pennsylvania. During 1911-1912 and 1913-1914 he held a University Scholarship and in 1914-1915 he was a Research Fellow in Geology.

He first came to the United States Geological Survey in the field party of the Geologic and Water Survey of the United States Geological Survey operating in northwestern Colorado and northeastern Utah. During the following season he was a member of the party operating in the same region. In the position of Junior Geologist he was a member of a party that pursued investigations in northern Montana during the field season of 1916.

Woodring, W. P.

The mollusks of the Bowden
beds of Jamaica.

1916

QE 3.6 .W 89

DATE

ISSUED TO

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NAME AND ADDRESS

